COAL AGE

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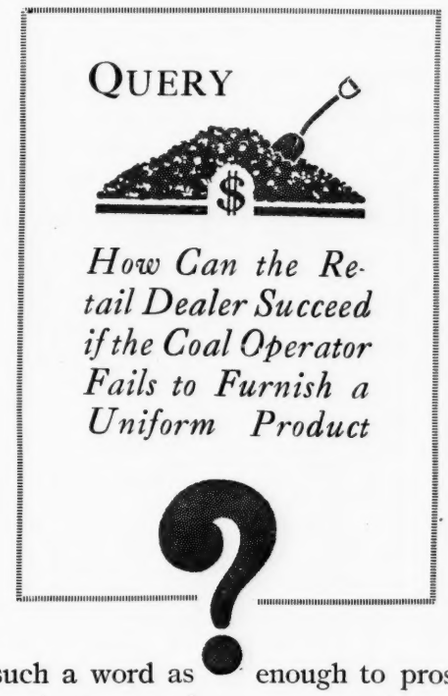
Requirements of the Retail Dealer

IT requires an occasional talk with a retail coal dealer to make the average coal-mining operator realize that there are many requisites in the coal business beyond the simple ability to load a certain number of railroad cars of coal (any old kind) per day, within a certain allowable cost per ton.

To make a success of the retail business a dealer must know the characteristics of each grade of coal produced by each coal mine selling coal within his territory. He must forget that there is such a word as coal and do all of his thinking in terms of slack, pea, nut, egg and lump. His ability at diplomacy is tested by such terms as dirt, rock, slate and bone, and his salesmanship depends entirely on his understanding of ash, sulphur and clinkers.



The fuel demand for domestic purposes is divided between boilers, furnaces, grates and cook-stoves, and the dealer must be competent to recommend the most suitable grades for each of these purposes. Furthermore, his decision must often take into account the financial ability of the prospective purchaser, as well as his home habits and business reputation.

For example, a certain high-ash nut coal may be very economical as a furnace fuel, but one customer would rather pay a little larger fuel bill than be troubled with the extra bother because of the excessive amount of ashes. The next-door neighbor, perhaps not so well off in worldly goods, believes in cutting the initial cost of his fuel, and so is not concerned with the trips to the ash dump, but thinks only of the dealer's bill for the season.

A wide-awake retail coal dealer can get all the business he can handle if he can only succeed in getting close enough to prospective buyers, and providing most of his competitors are just average dealers, who encourage their customers to order without interesting them to the point where they request advice.

But after the retail dealer builds up his business on the basis of furnishing every customer just what he requires, think what it means to him if he finds that he cannot depend upon a uniform product from the mines.

In times like the present, when the steam-coal demand is an unknown quantity and the demand for domestic coal becomes the flywheel of the industry, the retail dealer and his requirements are worthy of pretty serious consideration on the part of mine operators.

Value of Daily Cost Sheets

By H. S. Mikesell*

SYNOPSIS—Cost sheets in order to be most effective must be prepared every day. Such a compilation need not take fixed charges on plant or equipment into account, but only such items as may be considered strictly as operating expense.

Western coal operators, as a result of several unprofitable years through which they have passed, augmented by the prevailing unsatisfactory business affairs resulting from conditions abroad, are in a critical position. Producers must act cautiously and keep closely in touch with operating costs. Many operators of coal mines do not conduct a system of accounting or daily costs that at all times reflects the actual current cost of production, which is the only basis on which selling prices can be legitimately figured.

The compilation of a daily statement showing the cost of production should be considered by every operator a necessity for each mine. On account of the close margin generally existing in this day between the costs of production and the selling price of coal it is highly important that a daily cost should be as accurate and comprehensive as possible, in order to enable the operator to see immediately whether or not his expenses are within proper limits.

Some mine owners delude themselves with the belief that monthly or semi-monthly cost sheets are sufficient, but figures so compiled are often too late to be of the benefit expected in reducing expenses or for use as a basis in figuring market prices of coal. Thus unnecessary expense may already have been incurred for some length of time, and when the monthly or semi-monthly cost sheets are analyzed it can only be eliminated for the future if such expenditure still continues. A daily cost sheet if properly used prevents this waste, because unnecessary expense is immediately seen and can be eliminated without delay.

At nearly every mine a clerk is employed to maintain payrolls, and with little additional labor on the part of such a clerk a cost sheet can be accurately and promptly prepared. A sheet of this nature to be of value and to enable immediate elimination of unnecessary expense should be compiled promptly, not later than the day following the one that it covers.

The objection has been raised that this cost sheet requires too much clerical labor, but it has been found that a clerk can correctly prepare such a sheet complete each day with two hours' work, and in many cases it is done in less time where the clerk has been accustomed to its preparation and is familiar with conditions. It is evident that it is just as important to compile a daily cost sheet as it is to maintain a payroll, if not more so, from the coal producers' standpoint. For the best mine management neither one can be eliminated without disadvantage.

Daily Reports Are Superior to Monthly Reports

The best results are secured when operating officials are brought face to face with the costs every day rather than when compelled to wait for monthly reports. If superintendents and mine managers are placed in touch with daily costs they are in a better position to immediately discover leaks, prevent useless expenditures of labor, and maintain the cost of production on a proper basis. At many operations the daily cost sheet is the subject of a discussion between the superintendent and his foremen each evening, and a free and frank expression of opinion on the points brought out by its compilation cannot but be helpful to all concerned in the management of a mine and cause reduction in expenses. At operations composed of a number of mines cost sheets are frequently interchanged and comparisons made which are found of great advantage in reducing expenses and keeping costs in the correct ratio with production.

A statement of this kind may with advantage be passed down daily to various under-officials, especially those items applying to expenses under their individual control. A foreman in order to maintain equilibrium will attempt, for instance, to neutralize an increased expense for haulage by a reduction of inside labor, particularly if he is able to ascertain quickly whether or not the number of men employed in each classification under his control is in conformity with the tonnage produced.

If idle-day expense is high and tonnage correspondingly reduced with increased cost, the mine manager will be acquainted with this state of affairs immediately upon analyzing the cost sheet and will be able to take intelligent steps to put his working-forces on a proper basis to maintain minimum costs. In the cost sheet idle-day expense is absorbed concurrently by the tonnage produced on working-days, which is proper, and is not deferred until the end of the month or some later period.

The daily cost sheet to be illuminating should present the same classification of accounts embodied in the monthly accounting results, and naturally if a coal company has a classification of accounts it should be followed in a proper order in compiling the cost sheet.

The accompanying form shows a cost sheet which has been used in the West with signal success. It is a condensed replica of the time-books or payrolls boiled down to one sheet to show all essential information applying to operating expenses.

Important Items That Are Covered

This cost sheet, which embodies a report of idle day expense, also brings out clearly the following information:

1. The cost per ton of the production on the day for which it is issued together with the total expense incurred.

2. Total operating expenses of the current month's production to date with cost per ton thereof.

3. Total operating expenses to same date of the previous month with cost per ton thereof. (This enables a comparison at any time of the current month's costs with the figures of the previous month and shows readily whether expenses are decreasing or increasing for an individual mine.)

4. The cost per ton of coal produced for each classification of expenses is currently indicated, together with

*Auditor, Consolidated Indiana Coal Co., Chicago, Ill.

ROCK ISLAND COAL MINING COMPANY—OKLAHOMA DISTRICT

Daily Cost Sheet and Idle Day Report of Mine No.....at.....Date.....191....

	No.	Hr. W'd	Rate	Amt.	Per Ton
Superintendence:					
Hartshorne office					
Alderson office					
Local office					
Total					
Brought forward this month					
Total this item to date					
Total this item to date last month					
Engineering corps:					
Total					
Brought forward this month					
Total this item to date					
Total this item to date last month					
Mining:					
Machine boss					
Mach. runners, ton					
Mach. helpers, ton					
Mach. runners, day					
Mach. helpers, day					
Mach. miners					
Hand miners					
Total					
Brought forward this month					
Total this item to date					
Total this item to date last month					
Haulage:					
Pit boss					
Master mechanic					
Stablemen					
Boss driver					
Drivers					
Tracklayers					
Track-helpers					
Spraggers					
Oilers					
Pushers					
Road-cleaners					
Motormen					
Trip-riders					
Trappers					
Rope-riders					
Planemen					
Rustlers					
Slope engineers					
Sandboy					
Switchmen					
Couplers					
Motor repairs					
Pit-car repairs					
Handling mules					
Dynamo attendance					
Total					
Brought forward this month					
Total this item to date					
Total this item to date last month					
Inside labor:					
Pit boss					
Shotfirers					
Timbermen					
Electricians					
Jerrymen					
Loading rock					
Cleaning roads					
Mining mach. repairs					
Examining ladder					
Fire-runners					
Other labor (itemize)					
Total					
Brought forward this month					
Total this item to date					
Total this item to date last month					

	No.	Hr. W'd	Rate	Amt.	Per Ton
Hoisting and loading:					
Pit boss					
Top boss					
Fuel inspector					
Master mechanic					
Engineers, day					
Engineers, night					
Firemen, day					
Firemen, night					
Slope engineers					
Trimmers					
Weighmen					
Cagers					
Spraggers					
Dumpers					
Slate pickers					
Box-car loader					
Sandmen					
Pushers					
Trackmen					
Car rustler					
Shaker engine					
Pumping water					
Loaders					
Couplers					
Washermen					
Oilers					
Screenmen					
Pinchers					
Slack and ash wheelers					
Screen repairs					
Total					
Brought forward this month					
Total this item to date					
Total this item to date last month					
Ventilation and drainage					
Pit boss					
Master mechanics					
Pumpers					
Bratticemen					
Water bailers					
Sprinkling roads					
Changing air					
Gasmen					
Fire-testers					
Cleaning sump					
Pump repairs					
Electric power					
Total					
Brought forward this month					
Total this item to date					
Total this item to date last month					
Outside labor:					
Top boss					
Blacksmiths					
Machinists					
Blacksmiths' helpers					
Boss carpenter					
Carpenters					
Watchmen					
Teamsters					
Trackmen					
Rock-car men					
Roustabouts					
Cleaning up					
Handling timber					
Handling supplies					
Watering rock dump					
Work on rock dump					
Pay roll guards					
Other labor (itemize)					
Total					
Brought forward this month					
Total this item to date					
Total this item to date last month					
Loss and damage:					
Brought forward this month					
Total this item to date					
Total this item to date last month					

	Amt.	Per Ton
Rolls and deficient work:		
Brought forward this month		
Total this item to date		
Total this item to date last month		
Yardage and room-turning:		
Brought forward this month		
Total this item to date		
Total this item to date last month		
Material:		
Props and lumber		
Feed		
Mine rails		
Outside lubrication		
Inside lubrication		
Mine cars and repairs		
Mining-machine repairs		
Other repairs—outside		
Other repairs—inside		
Explosives		
Other supplies—outside		
Other supplies—inside		
Live-stock		
Total material		
Brought forward this month		
Total this item to date		
Total this item to date last month		
Summary:		
Superintendence		
Engineering corps		
Mining		
Haulage		
Inside labor		
Hoisting and loading		
Ventilation and drainage		
Outside labor		
Loss and damage		
Rolls and deficient work		
Yardage and room-turning		
Material		
Personal injuries		
General expenses		
Total operating expenses		
Brought forward this month		
Total operating expenses to date		
Less estimated local earnings		
Net operating expenses to date		
Total net operating expenses to date last month		
Additions and betterments:		
Labor		
Material		
Total today		
Brought forward this month		
Total this item to date		
Total this item to date last month		

	Today This Month	Same Day Last Month
Tonnage:		
Production today		
Less boiler coal used today		
Net output today		
Brought forward this month		
Net output to date		
Hours worked today		
Working days to date		

	Amount This Month	Amount Last Month	Per Ton This Mo.	Per Ton Last Mo.	Amount of Increase	Amount of Decrease
Total expense of this idle day						
Brought forward expense of previous idle days this month	*	*	*	*	*	*
Total expense of idle days to date	*	*	*	*	*	*
Average expense per day of idle days to date	*	*	*	*	*	*
Number of idle days to date	*	*			*	*
Amount of idle days estimate by general superintendent for current month	*	*			*	*
Amount of Sunday estimate by general superintendent for current month	*	*			*	*

* This mark to denote places figures must be inserted.

In computing "Costs Per Ton" boiler coal tonnage of each day must be subtracted from daily output.

Idle days must always include Sundays and holidays and periods embracing suspension of mining pending wage settlements.

In the columns reading "Increase" and "Decrease" show amounts of differences in expenses of idle days, not "Per Ton" figures.

In estimating Local Earnings use average revenue per ton for the current fiscal period shown for each mine in last monthly operating statement on hand. To arrive at the amount of Local Earnings, multiply production less boiler coal by the average revenue per ton. On idle days Local Earnings must not be estimated.

Cause for exceeding General Superintendent's Idle Day Estimate for this date, if so

Correct: Mine Clerk

DAILY COST SHEET WHICH HAS BEEN FOUND SUCCESSFUL BY THE ROCK ISLAND COAL MINING CO.

a comparison of the same expense up to the same time of the previous month. (By analysis of the sheet any one interested can note immediately under what classification of expense a decrease or increase is found as compared with the previous month.)

5. The number of men working under each classification, the hours worked, the rate of pay, the cost per ton for each item of labor, and the amounts earned by each classification of employees. (If an excessive number of men are employed in certain work as compared with what has been normally the case in the past, this may be readily seen. If rates of pay are not in accordance with wage agreements or do not conform to established usage, it may be discovered by means of this sheet.)

Some Charges Are Not Considered

This sheet applies only to operating expenses at the mines which are under the control of superintendents and mine managers, and it has not been considered necessary to include in this cost sheet fixed charges such as taxes, insurance and overhead expenses of executive officers and employees, which are usually arbitrary and with which the men on the ground have no connection.

The items of "rolls and deficient work," "yardage and room-turning" and "loss and damage" are for the purpose of this sheet estimated by payroll clerks on the basis of the previous month's actual figures, as well as the items of "general expenses" and "personal injuries," which may vary in actual amount from month to month. The item of "material" covers the actual value of supplies of all kinds used in or at each mine each day.

"Loss and damage" on this sheet covers the cost of labor and material used in repairing any damage, either in the mines or to the top works, tenement houses or other property, and expense in cleaning up débris resulting from fires, explosions, wind storms, cave-ins, etc. It is an account in which to place any extraordinary expense which is not found in the regular operation of a mine, so as to not disturb comparative costs or usual expenses.

Idle-Day Expenses Are Set Forth

Attention is directed to the feature reflecting idle-day expense. Where a mine is only operating part of the time the expense for idle time naturally increases the cost of production. It is consequently most important that a careful check should be maintained of labor employed under such conditions to prevent unnecessary expense.

It has been the custom where this sheet has been in effect to have the superintendent make an estimate at the beginning of each month as to what the expense will be for Sundays and idle days during the following month, and if the actual idle-day expense exceeds the estimated figures an explanation is required.

Idle-day expense has been a most potent factor in disturbing expected costs of production, and it has been found that the showing of this information in the daily cost sheet has led to reduced expenses for idle days in mine operations. In several instances where the actual idle-day expense was increased over the estimated figures and an explanation asked, it has been found that help was employed unnecessarily. Economies have accordingly been introduced which would not have been the case had the idle-day expense not been considered as an element of cost.

The sheet has a column also for indicating the output of the mine on the day for which it is issued as compared with the same day of the previous month, and a comparison of the net output for the month up to the date it is issued compared with the same date for the previous month. It also shows an important item—the number of working-days to date as compared with the same information for the previous month.

Field Coal-Dust Explosion Gallery

A cheap and easily constructed wooden gallery for demonstrating the explosibility of coal dust at miners' field meets has been designed and tested with satisfactory results by George S. Rice and L. M. Jones of the Bureau of Mines.

"Mine Tunnel" Made of Scantling and Boards for Proving the Dangers of Coal Dust

The gallery is constructed of rough 1-in. boards, nailed to timber sets of 3x4-in. material, erected on 6-ft. centers. The gallery measures 7 ft. wide by 6 ft. high, inside of the timber sets, and should be approximately 85 ft. long; this length may be reduced somewhat if necessary.

Six inches beneath the roof are placed shelves of 1x12-in. material, which are supported, one at each timber set, by means of two nails driven into each of the uprights.

The gallery is left open at both ends; and 12 ft. beyond one end there is a cannon, consisting of a discarded 9-in. liner from an explosive-testing cannon, which can be supplied by the Bureau of Mines upon payment of trans-

The Wooden Tunnel after a Violent Explosion Has Wrecked It

THE EFFECT OF COAL DUST IS EVEN MORE APPARENT AND SPECTACULAR THAN IN THE BOILER-IRON GALLERY

portation charges. This is set on timbers so as to be a foot above the ground level and is placed with the borehole parallel to the axis of the gallery.

From in front of the cannon and extending to a point 3 ft. within the gallery, a platform on which to place dust is erected. A heavy wire is fastened to an eye-bolt screwed into the front of the cannon and is stretched over all of the shelves, being attached to each by a nail on the top side near the edge away from the cannon. The cannon is braced loosely by a timber, extending from it to a pile of dirt in the rear, so as to allow a recoil of from 1 to 2 ft. This recoil, by means of the heavy wire attached to the dust shelves, will effect the dumping of the dust.

Each of the shelves should be heaped with the dust to be tested and placed on the four nails of each timber set so as to be nicely balanced thereon and yet to be easily dislodged by the recoil of the cannon.

Coal dust should also be heaped on the platform in front of the cannon, extending therefrom for about 15 ft. so as to propagate the flame from the cannon to the dust within the gallery. Roughly, 200 lb. of coal dust will be required for each demonstration. Cannon should

THE FAMILIAR SURROUNDINGS OF THE EXPERIMENTAL MINE WITH THE PORTAL OF THE REAL MINE ON THE LEFT AND THE IMITATION TUNNEL ON THE RIGHT

be charged with 1 lb. of "FFF" black powder tamped with 3 lb. of clay.

When the cannon is fired, all of the dust shelves should fall so as to prepare a cloud for the propagation of the flame throughout the gallery. If the coal dust is inflammable, the flame will pass along the dust in front of the gallery and will then be sent through the cracks between the boards of the sides and roof, and finally emerge at the opposite end of the gallery. Wet the boards before each test to prevent their taking fire.

Extracts from a Superintendent's Diary

The highbrows and the college graduates haven't a monopoly on philosophy by any manner of means. I realize the truth of that every now and then. Today, for example, our night watchman, whom I have always looked upon as a matter-of-fact, unimaginative fellow, volunteered a few remarks that entitle him to be classed as a near-philosopher to say the least.

I decided a few days ago to purchase a watchman's recording clock for our camp and asked our commissary manager and our master mechanic to decide upon the key stations. The key boxes were put up yesterday, and late in the afternoon our watchman was given his clock and all necessary instructions when he reported for work.

This morning, on arrival at my office, I found him sitting on the steps awaiting my coming ready to turn in his resignation. Assuming that his feelings were hurt, I tried to explain to him that we had no desire to devise a check upon his faithfulness, but were simply adopting a method recommended by all of the insurance companies and now in use at most industrial plants. I assured him that the old hit-and-miss system of doing things was rapidly losing ground and scientific methods were coming into use, covering all operations even to regulating night watchmen's movements. He shook his head.

"That's just the point, Mr. Thompson. The idea is all wrong, and I won't be a party to it. Talk about reducing everything to a scientific basis—that's the line of argument that made possible fake rain-producers out West.

"I've been trying to figure out the why's and the wherefore's of things in general, and it looks to me as if the things that count are being done by folks who don't know how they do them nor why they do them. A fellow day-dreams that something is going to happen or ought to happen, and he takes advantage of the advance information; and in consequence when it happens he comes in for credit which he does not deserve and really does not care for.

"I've tested it out many a time in night watching. Some nights I spend most of the time loafing around the power house giving and taking experiences with the engineer, and then on other nights I get a feeling that tells me that trouble is in the wind or some one is trying to outwit me, and I keep on the move all night. That's how I've earned my reputation as a night watchman, and now you propose to make me operate on a scientific basis and keep me moving when it isn't necessary and like as not make me walk into trouble some night when I'll be dead sure that trouble is awaiting me, but I won't be able to avoid it because I'll be due at a certain place at an exact minute irrespective of consequences. Wouldn't three or four fellows of average intelligence have a time trying to get the best of me and my clock?

"Whenever I recall the events in my life that have meant something to me I realize that generally I was pushed into them in some unaccountable manner by a subconscious power.

"A fellow might plan a system for controlling his passions, but about the only men who give a value to prearrangement schedules for all future actions are the ones who write books of advice for growing boys.

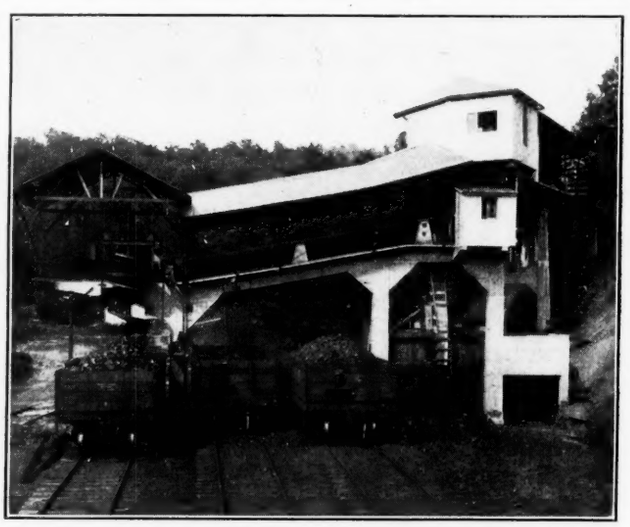
"Not being in sympathy with men of that school, I'll have to resign; and, Mr. Thompson, I suggest that you get a sleepy-headed fellow who has no imagination to take my place."

These were his exact words as near as I can recall them even to that phrase "subconscious power."

Concrete Tipple Construction

By E. L. Douglas*

The accompanying illustration shows the reinforced-concrete tipple of the Jellico Coal Mining Co. at Mountain Ash, Ky., built by the Associated Engineering Co., of Louisville, Ky. The tipple capacity is 1200 tons. Special features are screen hangers which require only 15 hp. to run under full load. The screens are adjustable from the sides so as to change the size of the coal by turning a wheel instead of having to take out the plates.



Jellico Coal Mining Co.'s Concrete Tipple at Mountain Ash, Ky.

Block coal is handled from the screen to the railroad by an adjustable spiral loader, which is shown in the cut. When the railroad car is placed for loading, the spiral chute is dropped to the bottom of the car and is gradually raised to the crowning point as the coal fills the car. The spiral loader is counterweighted and is handled by one man operating a chain wheel. No motive power is required.

In the construction of coke ovens one authority recommends ganister bricks, built in with sagger clay mortar, these bricks and the clay partly fusing and making a lasting, air-tight oven.

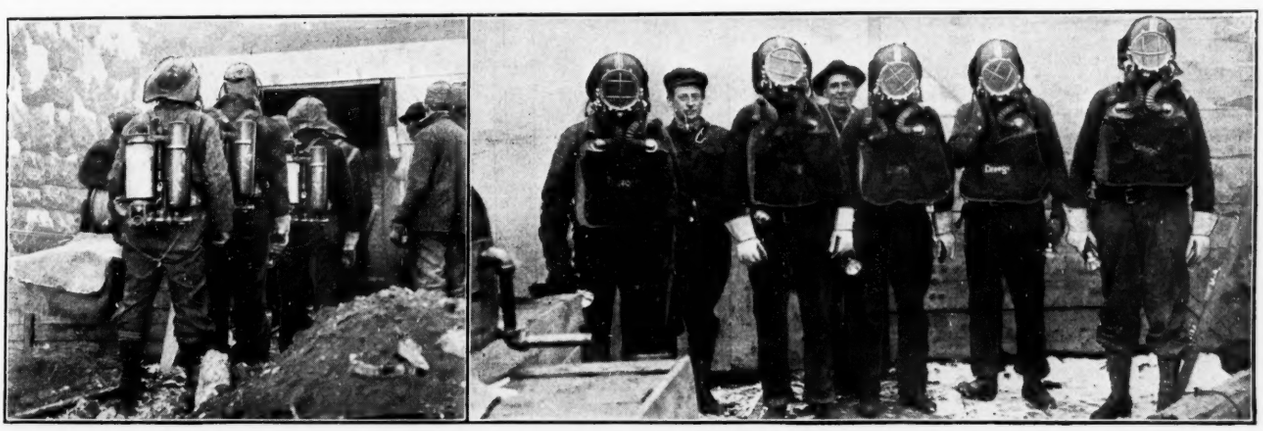
*General manager, Jellico Coal Mining Co., Mountain Ash, Ky.

Fire at Black Hawk Mine, Utah

SYNOPSIS—A severe fire in a Utah mine is extinguished with the aid of oxygen apparatus after a fight lasting 59 days. It is thought that an incendiary started the fire.

The Black Hawk mine of the Black Hawk Coal Co. is located near Price, Carbon County, Utah. About midnight of Jan. 31 of this year the night inspector discovered a fire at the mine.

Its origin is unknown, but the general belief is that it was started by an incendiary. An alarm was given, but the mine being reached by an inclined plane a mile long and being located at an elevation of about 750 ft. above the tipple, it was 3 a.m. before much help arrived. By that time large volumes of smoke were escaping from the fanway, and it was realized that the fire had made much progress. There are four openings within 100 yd., consisting of a manway on the north, a double-track main gangway, a ropeway and a fanway.



RESCUE CREWS AT THE BLACK HAWK MINE FIRE NEAR PRICE, UTAH

THE HOIST BEING UNDERGROUND, IT WAS PUT OUT OF COMMISSION

As the haulage engine was located 200 ft. inside the mouth of the drift, an effort was made to shut off the hoistroom from all connection with the fire so as to have the use of the engine to raise material with which to subdue the conflagration. This attempt was unsuccessful, for the heat and smoke drove the men out. Consequently it was decided on Feb. 1 to seal up the mine, and work was started with this end in view.

A slight explosion occurred at noon on Feb. 1, from which no casualties resulted. By noon of the next day all the openings except the manway and the small ropeway had been closed. At that time a second explosion occurred by which half a dozen men were slightly injured.

The mine was completely sealed the next day, and as there was no water available and as hauling material by teams up the long and steep plane was a slow arrangement, preparations were made to install a pumping plant and a haulage engine.

On Feb. 1 government rescue car No. 2 in charge of J. C. Roberts, with his assistants, George W. Riggs and C. S. Arthur, arrived from Bingham, Utah; J. E. Pettit, state mine inspector, arrived on Feb. 2.

TRIED TO VENTILATE WITH A CENTER STOPPING

The company had its own rescue and first-aid car, five helmets and many trained helmetmen. These were organized into squads, and other men were trained to supplement the regular force. By the middle of the month, everything being ready, including an electric hoist, a new pipe line a mile long and the necessary pumps, two squads of helmetmen made trips into the mine, one going into the main gangway and manway and the other going into the fanway and first-east heading. These two teams approached within 200 ft. of each other, the fire being between them. They found the mine filled with an unbreathable atmosphere and very hot.

They returned to the outside, and it was decided to split the main gangway with a cloth brattice, to put a small blower on one side and with the aid of this provision try to reach the fire with hose. This scheme was tried as soon as practicable, and rapid progress was made for awhile, but on the 23d the smoke became so dense and the heat so severe that the men were all driven out, and the mine was resealed.

ONE FATALITY WHILE EXPLORING FIRE AREA

It was opened again on Mar. 1, and several squads of helmetmen went in, and on the evening of that day the first and only fatality occurred. One of the helmetmen was overcome when on the first-east close to the fire and about 1100 ft. from the outside. He was taken out, but never recovered consciousness.

It was then determined that the right course was to load out the material instead of trying to reach the fire and quench it with water. This work was started on Mar. 5 and continued for several days, and by the 11th the fallen material was cleared up to a point back of the hoist and the latter put into commission. However, in the afternoon of that day smoke came out in such volumes that the men were driven out, and the mine was sealed up for the night. Work was started the next day and continued for three shifts, when the men were again driven out, and the mine was resealed.

Fire Causes Thousands of Tons of Coal to Fall

This advance and retreat occurred at intervals until Mar. 30, when the fire was finally extinguished; and regular operations were resumed on Apr. 1, though much fallen material remained to be cleared up. Only a few tons of rock roof had fallen, but the seam being 18 ft. thick or thereabouts, several thousand tons of coal had come down, though the fire had not reached it. At some points 8 ft. of coal had chipped off in small pieces, and where this occurred the roof was in every case arched by the fall. On the whole, little damage was done to the mine, though the quenching of the fire was very expensive.

The company was fortunate in having the services of such experienced mine-fire fighters as J. E. Pettit, the state inspector of mines, J. C. Roberts, mining engineer in charge of United States rescue car No. 2, and Robert Howard, the company mine inspector. The latter was put in charge of the details of the operation by Vice-President J. F. Healy, and with the other two experts composed, as it were, a "board of strategy."

Deputy State Mine Inspector Smith also rendered valuable service, as did also Superintendent Garvey, of the Mohrland colliery, who had charge of the night shift. The company was also fortunate in getting the federal mine-rescue car so promptly, and is to be congratulated in that it was manned by such competent men, to whom too high praise cannot be given.

Bravery of the Mine Employees

It is pleasant to note the vigor, fearlessness and zeal with which all the company employees who were called upon responded. Not one of them refused to do his part. None of them showed the least hesitation in working in high temperature and bad air and under roof which might be dangerous. The loyalty shown throughout could not be exceeded and was most highly appreciated by the company. In acknowledgment, it has donated $1000 to the amusement clubs to be used to the best advantage of all its employees. It will also present medals to the helmetmen, who did some exceptionally good work and who undoubtedly saved some lives on Mar. 1. On that occasion the indefatigable safety superintendent, A. W. Dennison, was overcome while assisting another helmetman out of the mine.

"Safety first" was adopted as a binding rule from the beginning and was never overlooked. Aside from the one death, the rule was successful in preventing fatalities.

Determination of Gases

Roy Stevens, chemist of the United States Smelting Co., of Midvale, Utah, began analyzing the mine air on Feb. 4 and continued for a couple of weeks, and was followed by J. B. Forrester until the end of the work. About 200 analyses were made, each in a surprisingly short time, not more than 20 min. being required in some cases to determine the presence or absence of explosive gases, illuminants, carbon monoxide, carbon dioxide, oxygen and nitrogen. As the tests were many and quickly made they were of great help to those engaged in the work. No explosive gases have ever been found in the mine, but it was felt that possibly some might be made by the fire.

The operations in extinguishing the fire occupied 59 days, and during that period 20 or more Draeger oxygen apparatus were in use. These met the test satisfactorily, nothing but ordinary repairs being necessary such as long-continued use might be expected to require. J. E. Pettit, the state mine inspector, declares that without such equipment the fire could not have been extinguished.

Deaths at Layland Mines

From E. A. Henry, chief of the Department of Mines of West Virginia, we have received a complete list of the persons killed at the Layland, W. Va., explosion, and from that account the following enumerations have been made. Figuring by nationalities there were 36 Americans (including 1 negro), 28 Austrians (including 4 Austrian Poles, 3 Slavish Austrians, 3 Slavs, 1 Pole, 2 Bohemians and 3 men not classified, but with names suggesting Austrian nationality), 22 Italians, 21 Russians, 2 Syrians, 2 Scotchmen, 1 German, 1 Spaniard, 1 Welshman and 1 Englishman. In all there were 115 victims.

Grouping by occupations there were 85 miners, 7 trip-runners, 5 tracklayers, 4 motormen, 2 mine foremen, 2 motor-runners, 2 stonemasons, 1 slate-man, 1 pumper, 1 substation man, 1 electrician, 1 store porter and 3 men who were not yet on the payroll.

American Coal for Brazilian Railway

The Central Railway of Brazil (Estrada de Ferro Central do Brasil), a government line, has recently approached an American concern here, says Consul General Alford L. M. Gottschalk, with a proposition to purchase 20,000 tons of Pocahontas coal. The price is said to be $15.09 per ton.

The Central Railway has had special permission from the government to make its purchases of coal for cash and to meet payments therefor out of its actual cash receipts month by month. The director of the road states that it consumes 300,000 tons of coal per year.

COMING MEETINGS

International Railway Fuel Association will hold its annual meeting at Chicago, Ill., May 17-20. Secretary, C. G. Hall, 922 McCormick Bldg., Chicago, Ill.

Oklahoma Operators and Miners Association and U. S. Bureau of Mines will hold a state-wide first-aid meet at McAlester, Okla., on May 22, 1915.

Retail Coal Dealers' Association of Texas will hold its meeting May 25-27, 1915, at Galveston, Tex.

The Illinois Mining Institute will hold its next meeting at Danville, Ill., May 27-29, 1915. The officers of the Institute are: President, J. W. Starks, Georgetown, Ill.; first vice-president, William Burton, Herrin, Ill.; second vice-president, Fred C. Pfahler, Belleville, Ill.; secretary and treasurer, Martin Bolt, Springfield, Ill.

Rocky Mountain Coal Mining Institute will hold its next meeting in Trinidad, Colo., June 8, 9 and 10. Secretary, F. W. Whiteside, Denver, Colo.

West Virginia Mining Institute will hold its summer meeting at Wheeling, W. Va., June 15 and 16. Secretary, E. N. Zern, Morgantown, W. Va.

The American Society of Mechanical Engineers will hold its summer meeting at Buffalo, N. Y., June 22-25, 1915. Secretary, Calvin W. Rice, 29 W. 39th St., New York City.

M. O. I. Coal Association annual meeting will be held June 22-25, 1915, at Cedar Point, Ohio. Secretary, B. F. Nigh, Cleveland.

The American Institute of Electrical Engineers will hold its annual convention June 29 to July 2, 1915, inclusive at Deer Park, Md. Headquarters will be at the Deer Park Hotel. Secretary, F. L. Hutchinson, New York.

Comparative Costs of Motor-Truck and Wagon Delivery*

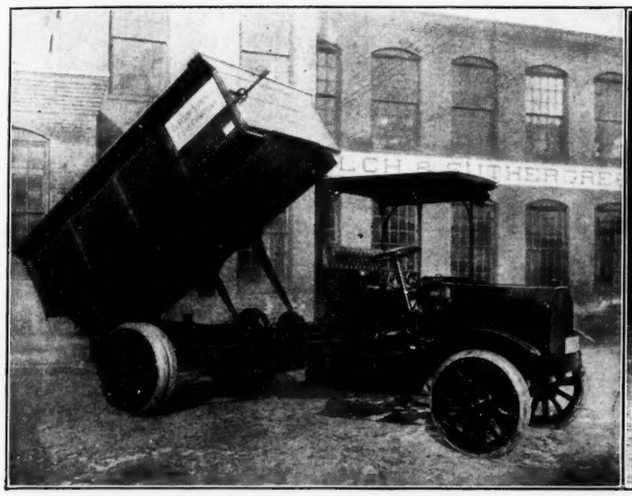
By Henry L. Miller†

SYNOPSIS—An analysis of the comparative costs of delivering coal by motor trucks of different sizes and by teams. The article is based on carefully compiled data covering a period of several years, and due allowance has been made for all the variable conditions. Prospective purchasers of motor trucks will find much of interest in the article.

The figures presented herewith show the performance and averages on one 4-ton truck for two years, one 4-ton truck for one year, one 2-ton truck for five months and one double team and one single team for one year. Each study is divided into periods of six months, with the exception of the 2-ton truck, which has been in commission only five months.

In our efforts to ascertain the difference in the cost of truck and team delivery we found it quite necessary to know the average number of miles made by the teams. Answers to inquiries made in a number of different directions were so much at variance that we endeavored to find some kind of an instrument that would register the mileage of a heavy wagon. A little more than a year ago we found such an instrument and have kept our mileage on two teams for twelve months. We also found that in order to make a fair comparison we should keep a record of the helpers furnished the trucks and the teams, and this has been done for the twelve-month period.

In presenting these figures I am well aware that both the performance and the cost will differ greatly from figures that many others have kept. I know that the average load will appear small and the cost per ton-mile large as compared with the results obtained by dealers in the vicinity of Boston; it is therefore necessary that a brief statement be made as to conditions under which the coal dealer in Worcester labors.



Views Showing Truck Dumping and Normal

TABLE SHOWING COMPARATIVE RESULTS OF DIFFERENT MOTOR TRUCKS AND TEAMS OVER SIX-MONTH PERIODS

	4-Ton Truck No. 50				4-Ton Truck No. 60		2-Ton Truck No. 70	Double Team		Single Team	
Six-month period	1st	2nd	3rd	4th	1st	2nd	*	1st	2nd	1st	2nd
Days operated	124	148	121	111	131	146	118	149	145	151	147
Days idle	2	4	27	43	14	8	8	3	9	1	6
Miles	3324	4822	3345	2894	3386	3970	2808	1717	1574	1950	1647
Tons	2503	2893	2625	2710	2611	3467	1200	1349	1347	695	627
Expense	$1.82	$3.29	$6.19	$4.49	$1.852	$3.07	$0.86	$2.04	$2.04	$1.02	$1.02
Overhead	5.78	5.78	5.78	5.78	5.597	5.74	3.42	1.00	1.00	0.55	0.55
Total (per diem)	7.60	9.07	11.97	10.27	7.449	8.81	4.28	3.04	3.04	1.57	1.57
Driver	3.00	3.00	3.00	3.00	3.00	3.00	2.50	2.33	2.33	2.17	2.17
Helpers	3.50	3.50	3.65	3.37	3.50	3.50	3.66	1.94	1.88	0.48	0.72
Total	14.10	15.57	18.62	16.64	13.95	15.31	10.44	7.31	7.25	4.22	4.46
Averages:											
Miles per day	26.8	32.5	27.64	26.07	25.84	27.19	23.80	11.52	10.85	12.91	11.20
Tons, per day	20.19	19.54	21.69	24.41	19.93	23.75	10.17	9.05	9.29	4.60	4.27
Load in tons †	4.00	4.00	4.11	4.08	3.97	3.96	2.11	2.25	2.41	1.03	1.00
Trips per day	‡	‡	5.28	5.98	4.98	5.99	4.81	4.01	3.86	4.45	4.27
Miles per trip	‡	‡	5.24	4.36	5.18	4.54	4.94	2.87	2.81	2.90	2.62
Cost per mile	0.526	0.479	0.673	0.638	0.539	0.563	0.438	0.634	0.668	0.326	0.398
Cost per ton-mile	0.135	0.119	0.164	0.156	0.135	0.142	0.208	0.282	0.277	0.317	0.398

*For a five-month period only. † Estimated. ‡ Figures not available.

Worcester is the "City of the Seven Hills," and what the hills are can better be appreciated after one has done business there. We are sometimes able to place on our double teams a load as great as 7000 lb., but on long trips we seldom put on more than 6000 lb., and

†Secretary, Claflin-Sumner Coal Co., 9 Pleasant St., Worcester, Mass.

*Paper presented at the New England Coal Dealers' Association meeting at Boston, Mass., Mar. 24 and 25.

many times only 4500 lb.; and in all cases where hills are steep, teams go together, taking lead chains with them and helping each other over the heavier grades, or else they have to go loaded very light. Our average haul is long and is growing more so each year.

There has been no attempt to make a record with either trucks or teams. Our truck record might have shown a much lower cost per ton-mile had we exceeded the rated capacity in our loading, but we have strictly avoided overloading, and while our figures for the first and second year are high we anticipate a considerable saving over a period of three or more years. I do not mean to infer that we have never loaded our 4-ton trucks with more than 8000 lb., but where we have loaded in excess of the rated capacity it was always under conditions where the load could be handled with perfect ease.

Overhead Charges and Depreciation

Our charges for expense on our trucks include the amounts actually paid out for gasoline, oil, grease, repairs, tires and sundries. Our overhead charges include depreciation and insurance, the latter covering employers' liability, property damage and fire insurance. Our depreciation we have figured at 33⅓ per cent. per year. We recognize that this is a much larger amount than has probably been given you for depreciation by truck salesmen, but careful inquiries in many directions have led us to adopt this figure. Should it prove at the end of three years that we still have a value left in our trucks, the cost of running will be decreased an amount equal to the value of the truck at that time. In our per-diem charge we have added to the expense and overhead charges the amount paid the driver and the average daily amount paid for helpers during each period of six months.

In our cost for team delivery we include the actual expense per day as shown by an average taken from records kept for four years. To this we have added overhead charges, which include employers' liability insurance, property damage insurance, fire insurance and depreciation. Our depreciation is based upon a cost of a horse at $300 with harness and wagon at $450. We have placed the life of a horse at six years and the average life of a wagon and harness at ten years.

Uses of Trucks and Wagons

The 4-ton trucks are equipped with power body-hoists and are used as much as possible where we can load them from overhead. They handle considerable bituminous coal where loads can be dumped and have also been used for family trade where a single order amounts to four or more tons. We have also used them for two or more orders on one delivery in a few cases, but have found this expensive.

The 2-ton truck has been used very little in manufacturing business, but has been confined more particularly to long distance 2-ton domestic trade; it is also often called upon to carry two or more orders on one trip. This is a more expensive delivery than is put to the 4-ton trucks, as will be noted on the record.

Double teams are kept as much as possible on not less than 2-ton orders, but sometimes we are obliged to load them with several orders on one trip.

Small business, such as quarter-ton and half-ton loads, goes usually to single teams, getting as many orders on one trip as can be conveniently delivered. Even then, such delivery is expensive, as will be seen from the record.

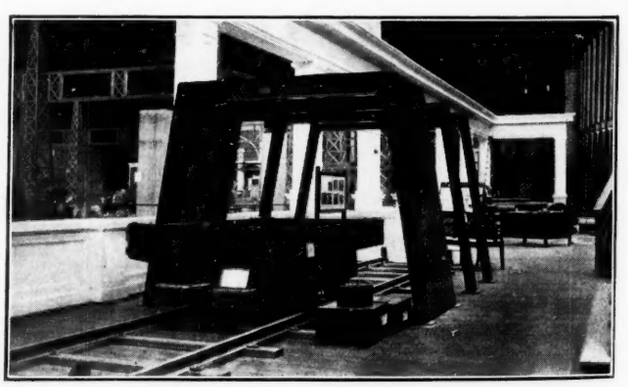
Mining Exhibits at the Panama Exposition

The accompanying sketch shows in detail the plan and sectional views of the demonstration mine installed by the Bureau of Mines in the Palace of Mines and Metallurgy at the Panama-Pacific Exposition. This interesting installation is located beneath the floor of the building and is

Palace of Mines and Metallurgy at Panama-Pacific Exposition

entered through a shaft and slope in the southern end of the Bureau of Mines space.

In the exhibit of the Bureau of Mines modern methods of rescue and recovery work are illustrated by trained men using Fluess, Draeger and Westphalia types of breathing apparatus. Two daily explosion demonstrations are given by the Bureau of Mines corps at the demonstration mine. One feature of this exhibit is the rescue of a supposed victim from a gas-proof smoke-room. There is also an extensive display of safety lamps from the earliest type



Part of Carnegie Steel Co.'s Exhibit

to the most modern permissible double-bonneted lamp. Another exhibit covers the matter of mine explosives and shows all the materials that are available in the manufacture of these explosives. Methods of testing explosives are illustrated by a carefully arranged photographic display.

The welfare exhibit of the bureau shows a model village and an ideal industrial arrangement of water-supply, hospital, recreation room, wash-house, etc. A model is shown of a wash- and change-house as an illustration of how such a building should be designed.

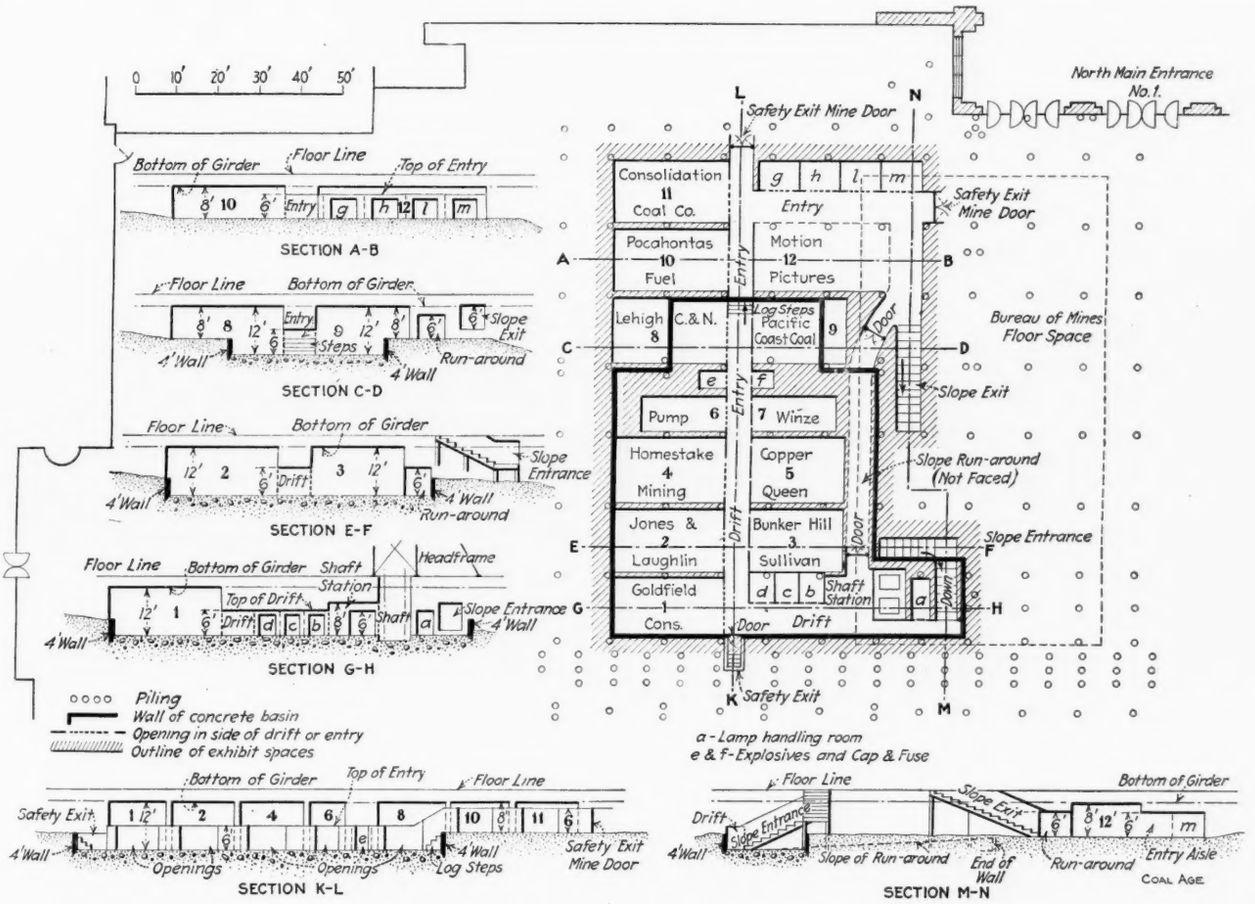
The explosibility of coal dust is illustrated by an apparatus which shows how finely divided coal dust in

Arizona Has but Little Coal

Frank C. Schrader, of the United States Geological Survey, says in a report on the "Mineral Deposits of the Santa Rita and Patagonia Mountains, Arizona," that a deposit of lignite is reported to occur near the Whetstone mountains on the western edge of Cochise County in the southeastern corner of the state.

The thickness of the coal-bearing strata is about 40 ft., and the beds occur conformably in a formation of inclined sandstone and shale or slate which is apparently Mesozoic. The area thus enriched with lignite is said to have a known extent of nearly half a mile.

At one point R. R. Richardson opened the deposit by



PLAN AND SECTIONAL VIEWS OF "THE MINE" AT PANAMA-PACIFIC EXPOSITION

contact with a sufficient amount of oxygen becomes just as explosive when ignited as black powder. Another display shows a model of a rock-dust barrier designed by the engineers of the Bureau of Mines. Still another exhibit illustrates the loss that occurs in burning coal in various types of boiler furnaces.

In "the mine" is a motion-picture theater, in which methods of mining and handling coal are shown continuously throughout each day. Beyond this is an actual reproduction of full-sized entries, drifts, stopes and rooms selected from typical mines in various parts of the United States. Mining machinery and different appliances used in modern practice are shown installed ready for operation. Individual exhibits of large American mining companies may be located from the sketch.

a 40-ft. shaft, but the coal, which was of low grade at the surface, was found not to be improved perceptibly at that depth. The shale on being rubbed or pounded with a hammer is said to give off a petroleum odor, but no oil seepage is reported. Plentiful remains of petrified trees, some about 100 ft. long, are found.

Nearby, Messrs. Fairlee and Jenson, of Benson, discovered and opened two beds, likewise lying conformably in sandstone and shale, which here incline at 22 deg. to the horizontal. The beds are about 8 ft. apart, and the coal is said to be of good grade. It was used with good results on the forge for sharpening miners' tools. But the thickest bed does not much exceed 4 in., so after developing the ground for a distance of about 1000 ft. the work was abandoned.

Comparison of Coal Consumption with that of Other Fuels

By A. A. Potter* and W. A. Buck†

SYNOPSIS—A valuable analysis of some coal statistics from the census reports, supplemented by data from other sources. A detailed comparison is made of the output of coal and other fuels in all sections of the country. Bituminous and anthracite coal made up 84 per cent. of the fuel consumed for manufacturing purposes in 1909.

Table 1 and Fig. 1, compiled from the U. S. Census Reports for 1913, show the amount and value of coal, petroleum oil and natural gas produced in the various sections of the United States.

The New England States have no fuel resources, while the Middle Atlantic States, which include New York, New Jersey and Pennsylvania, produced fuel valued at $434,317,220 in 1913, which is 40 per cent. of the total production of the United States.

The East North-Central division, which includes the states of Ohio, Indiana, Illinois, Michigan and Wisconsin, ranks second in the value of fuel produced. In 1913 this amounted to $193,454,756, or 17.8 per cent. of the total for the United States.

The South Atlantic States ranked third, producing 13.8 per cent. of the total fuel; the West South-Central fourth, with 10.5 per cent.; the Pacific fifth, with 5.25 per cent.; the East South-Central sixth; the Mountain States seventh; the West North-Central eighth, with only 3.6 per cent.; and the New England States last.

The states producing the greatest value of fuel in each of the various divisions are: Pennsylvania in the Middle Atlantic, Illinois in the East North-Central, Kansas in the West North-Central, West Virginia in the South Atlantic, Alabama in the East South-Central, Oklahoma in the West South-Central, Colorado in the Mountain States and California in the Pacific States. The Mountain and Pacific States have probably a greater percentage of undeveloped fuel resources than any of the other divisions in the United States.

*Dean of the division of engineering and professor of steam and gas engineering, Kansas State Agricultural College.

†Fellow in steam and gas engineering, Kansas State Agricultural College.

TABLE I. FUEL PRODUCTION IN THE UNITED STATES, 1913

Source: Department of the Interior—Geological Survey

Geographical Divisions and States	Coal, Short Tons	Coal, Per Cent. of Total	Coal, Value, Dollars	Petroleum, Barrels	Petroleum, Per Cent. Total	Petroleum, Value, Dollars	Natural Gas, Thousands of cu.ft.	Natural Gas, Per Cent. Total	Natural Gas, Value, Dollars	Total Value of Fuel	Per Cent. of Total for U.S.
New England	0	0	0	0	0	0	0	0	0	0	0
Maine	0	0	0	0	0	0	0	0	0	0	0
New Hampshire	0	0	0	0	0	0	0	0	0	0	0
Vermont	0	0	0	0	0	0	0	0	0	0	0
Massachusetts	0	0	0	0	0	0	0	0	0	0	0
Rhode Island	0	0	0	0	0	0	0	0	0	0	0
Connecticut	0	0	0	0	0	0	0	0	0	0	0
Middle Atlantic	265,306,139	46.5	388,220,933	8,865,493	3.56	21,974,809	127,375,526	21.90	24,121,478	434,317,220	40.60
New York	0	0	0	902,211	0.35	2,169,357	8,515,257	1.47	2,425,633	4,594,990	0.42
New Jersey	0	0	0	0	0	0	0	0	0	0	0
Pennsylvania	265,306,139	46.50	388,220,933	7,963,282	3.21	19,805,452	118,860,269	20.43	21,695,845	429,722,230	39.58
East North Central	116,216,728	20.40	131,718,771	33,634,462	13.56	49,795,588	58,301,758	10.02	11,940,397	193,454,756	17.83
Ohio	36,200,527	6.35	39,948,058	8,781,468	3.54	17,538,452	50,311,940	8.65	10,416,699	67,903,209	6.25
Indiana	17,165,671	3.01	19,001,881	956,095	0.39	1,279,226	3,220,885	0.56	948,278	21,229,385	1.96
Illinois	61,618,744	10.82	70,313,605	23,893,899	9.63	30,971,910	4,767,128	0.81	574,015	101,859,530	9.40
Michigan	1,231,786	0.22	2,455,227	3,000	0.00	6,000	1,805	0.00	1,405	2,462,632	0.22
Wisconsin	0	0	0	0	0	0	0	0	0	0	0
West North Central	19,541,591	3.43	33,751,962	2,378,029	0.96	2,255,283	22,972,024	3.95	33,264,475	39,333,720	3.63
Minnesota	0	0	0	0	0	0	0	0	0	0	0
Iowa	7,525,936	1.33	13,496,710	0	0	0	120	0	120	13,496,830	1.26
Missouri	4,318,125	0.77	7,468,308	3,000	0.00	7,000	20,865	0.00	6,795	7,482,103	0.69
North Dakota	495,320	0.07	750,652	0	0	0	33,246	0.01	15,583	766,235	0.07
South Dakota	0	0	0	0	0	0	33,246		15,583	15,583	0.00
Nebraska	0	0	0	0	0	0	0	0	0	0	0
Kansas	7,202,210	1.26	12,036,292	2,375,029	0.96	2,248,283	22,884,283	3.94	3,288,394	17,572,969	1.61
South Atlantic	85,172,515	14.96	87,113,183	11,567,299	4.66	28,828,814	245,453,985	42.13	34,164,850	150,106,847	13.82
Delaware	0	0	0	0	0	0	0	0	0	0	0
Maryland	4,779,839	0.84	5,927,046	0	0	0	0	0	0	5,927,046	0.54
District of Columbia	0	0	0	0	0	0	0	0	0	0	0
Virginia	8,928,068	1.56	8,952,653	0	0	0	0	0	0	8,952,653	0.83
West Virginia	71,508,982	12.52	71,872,165	11,567,299	4.66	28,828,814	245,453,985	42.13	34,164,850	134,865,829	12.42
North Carolina	0	0	0	0	0	0	0	0	0	0	0
South Carolina	0	0	0	0	0	0	0	0	0	0	0
Georgia	255,626	0.04	361,319	0	0	0	0	0	0	361,319	0.03
Florida	0	0	0	0	0	0	0	0	0	0	0
East South Central	44,198,906	7.76	51,484,187	524,568	0.21	675,748	15,150,239	2.62	1,570,420	53,730,355	4.95
Kentucky	19,616,600	3.44	20,516,749	524,568	0.21	675,748	1,821,526	0.33	509,846	21,702,343	2.00
Tennessee	6,903,784	1.21	7,883,714	0	0	0	2,400	0.00	600	7,884,314	0.73
Alabama	17,678,522	3.11	23,083,724	0	0	0	13,326,313	2.29	1,059,974	24,143,698	2.22
Mississippi	0	0	0	0	0	0	0	0	0	0	0
West South Central	8,829,021	1.55	16,755,369	91,687,690	36.60	86,513,472	100,872,527	17.35	10,659,993	113,928,834	10.50
Arkansas	2,234,107	0.39	3,923,701	0	0	0	368,791	0.06	89,807	4,013,508	0.37
Louisiana	0	0	0	12,498,828	5.02	12,255,931	13,326,313	2.29	1,059,974	13,315,905	1.23
Oklahoma	4,165,770	0.73	8,542,748	63,579,384	25.56	59,581,948	75,017,668	12.90	7,436,389	75,561,085	6.96
Texas	2,429,144	0.43	4,288,920	15,009,478	6.02	14,675,593	12,159,755	2.10	2,073,823	21,038,336	1.94
Mountain	26,832,283	4.71	41,989,346	2,597,321	1.05	1,366,011	737,582	0.13	179,614	43,534,971	4.01
Montana	3,240,973	0.57	5,653,539	0	0	0	0	0	0	5,653,531	0.52
Idaho	1,000	0.00	2,600	0	0	0	0	0	0	2,600	0.00
Wyoming	7,393,066	1.30	11,516,045	2,406,522	0.97	1,187,232	368,791	0.06	89,807	12,787,084	1.18
Colorado	9,232,510	1.62	14,035,090	188,799	0.08	174,779	368,791	0.06	89,807	14,299,676	1.32
New Mexico	3,708,806	0.65	5,401,260	2,000	0.00	4,000	0	0	0	5,405,260	0.50
Arizona	0	0	0	0	0	0	0	0	0	0	0
Utah	3,254,828	0.57	5,384,127	0	0	0	0	0	0	5,384,127	0.49
Nevada	1,100	0.00	2,685	0	0	0	0	0	0	2,685	0.00
Pacific	3,950,865	0.69	9,445,034	97,791,368	39.4	45,711,663	11,034,597	1.90	1,883,450	57,040,147	5.25
Washington	3,877,891	0.68	9,243,137	0	0	0	0	0	0	9,243,137	0.85
Oregon	46,063	0.01	116,724	0	0	0	0	0	0	116,724	0.01
California	13,911	0.00	45,173	97,788,525	39.4	45,709,400	11,034,597	1.90	1,883,450	47,638,023	4.39
Alaska	13,000	0.00	40,000	2,843	0.00	2,263	0	0	0	42,263	0.00
Grand total	570,048,125	100.00	760,478,785	248,446,230	100.00	237,121,388	581,898,239	100.00	87,846,677	1,085,446,850	100.00

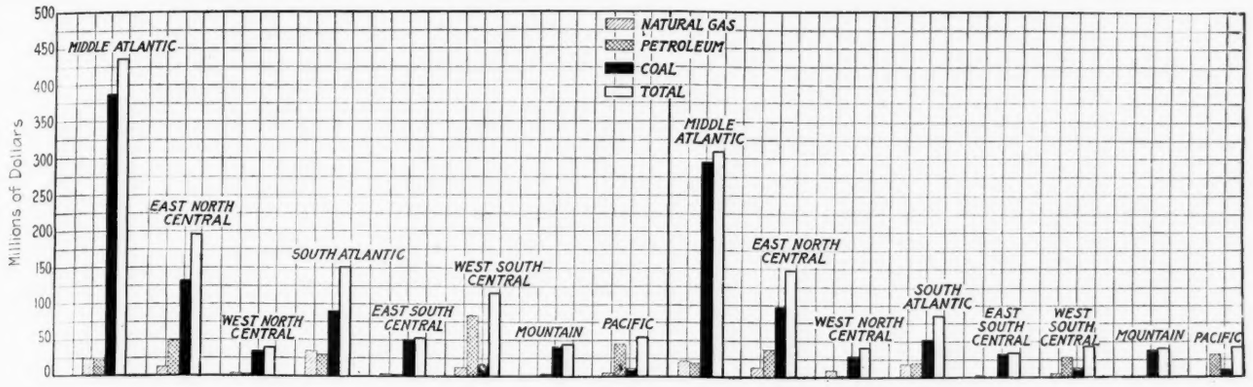


FIG. 1. (1913) FIG. 2. (1910)

VALUE OF FUEL PRODUCED IN VARIOUS DIVISIONS OF THE UNITED STATES

The amount of coal, oil and gas produced in the various divisions in 1910 is shown in Fig. 2. Table 2 shows the relative values of the various fuels in the manufacturing industries. Bituminous coal constitutes over 87 per cent. of the total fuel used in manufacturing, when including the manufacture of coke. Anthracite coal ranks second as a fuel for manufacturing purposes; oil, including gasoline, ranks third; wood fourth, and gas fifth, the calorific value of the gas utilized constituting only 0.01 per cent. of the total value of fuel in manufacturing. This comparison is even more marked in Fig. 3.

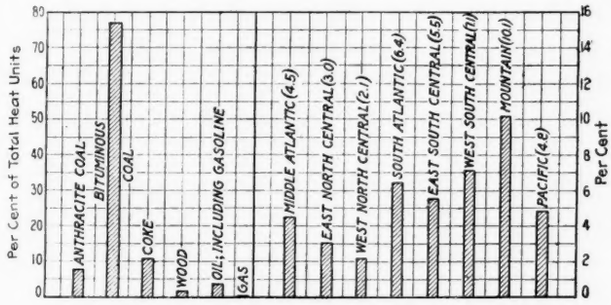


FIG. 3 HEAT VALUE OF FUELS USED IN U. S.

FIG. 4 RATIO BETWEEN VALUE OF FUEL AND MANUFACTURING

An analysis of different lines of manufacture revealed the fact that the cost of power varies from 1 to 3 per cent. of the total production cost in the majority of factories. Exceptions to this are probably cement and glass factories, where the cost of fuel is 10 to 30 per cent. of the total cost of manufacturing.

TABLE 2. FUEL USED FOR MANUFACTURING IN U.S.A., 1909

Source: Bureau of Census, Department of Commerce and Original Calculations

Kind of Fuel	Quantity	Equivalent Heat Value in Thousands, B.t.u.	Per Cent. of Total Heat
Anthracite coal	14,339,220 long tons	439,600,000,000	7.74
Bituminous coal*	161,792,218 short tons	4,368,000,000,000	76.93
Coke	37,959,970 short tons	592,000,000,000	10.43
Wood	5,481,311 cords	82,220,000,000	1.45
Oil, including gasoline	34,331,632 bbl.	193,700,000,000	3.44
Gas	451,302,493 cu.ft.	428,700,000	0.01
Total		5,677,348,700,000	100.00

* Includes 58,788,398 tons used in making coke.

Note: The calculations of the British thermal unit for the various fuels were made in accordance with the following:

Anthracite coal 13,700 B.t.u. per pound, or 30,650,000 B.t.u. per long ton.
Bituminous coal 13,500 B.t.u. per pound, or 27,000,000 B.t.u. per short ton.
Coke 7800 B.t.u. per pound, or 15,600,000 B.t.u. per short ton.
Wood average 2500 lb. per cord and 6,000 B.t.u. per pound, or 15,000,000 B.t.u. per cord.
Oil, including gasoline, 19,000 B.t.u. per pound, or 5,700,000 B.t.u. per barrel of 300 pounds.
Gas (natural) 950 B.t.u. per cu.ft.

TABLE 3. RELATION BETWEEN THE VALUE OF FUEL AND OF MANUFACTURING FOR U.S.A., 1909

Source: Bureau of Census and Geological Survey

Division	Value of Fuel	Value of Mfg. Products, Thousands of Dollars	Ratio of Fuel to Mfg. Products
New England	0	2,670,065	0.0
Middle Atlantic	318,267,468	7,144,761	0.045
East North-Central	146,909,319	5,211,703	0.028
West North-Central	38,524,438	1,803,900	0.021
South Atlantic	88,864,143	1,381,187	0.064
East South-Central	34,461,643	630,488	0.055
West South-Central	41,346,943	625,443	0.066
Mountain	37,124,716	363,996	0.101
Pacific	40,705,122	843,512	0.048
Grand total	746,203,792	20,675,055	0.0361

Table 3 and Fig. 4 were compiled from the 1910 Census to show the relation between the value of the fuel resources and of the manufactured products for the various divisions of the United States. The New England States have no fuel resources, while the Mountain States show the greatest ratio, which means that but little of the fuel produced in that division is utilized for manufacturing purposes.

Anthracite Litigation—Confusion exists in some quarters regarding litigation pending against anthracite roads. For years this group has had the attention of the Attorney-General and the Commerce Commission, and there are now several cases of prime importance to the "hard-coalers."

Arguments were made Jan. 16 and 17 at Washington in general investigation by the Commerce Commission into rates and practices, the most inclusive investigation ever made of this much-probed subject. The carriers have been put on the defensive to justify existing interstate rates for carrying anthracite both east and west from Pennsylvania fields. The commission has under consideration the evidence and arguments, but opinion among interests which have followed the case is that decision may not come down until after the summer recess.

The other case of prime interest pending is the dissolution suit against the Reading system, including the Reading Ry. Coal Co., Jersey Central, Lehigh & Wilkes-Barre Coal Co., various smaller companies and various individuals. Final arguments were made last June before the Federal Court at Philadelphia. Decision may come any day.

Arguments were made before Judge Hough in the Lehigh Valley dissolution suit last November, and decision was rendered late in December dismissing the government complaint, the court digesting the evidence with refreshing promptness.

There are several reasons, however, why decision in the Reading case should be longer delayed. There are three judges considering the Reading, and only one heard the Lehigh evidence. The Lehigh, too, was much less complicated. This is the third time dissolution proceedings have been brought against the Reading, and naturally every case takes longer than the ones that went before.

The lower courts have decided against the government in proceedings against the Lehigh Valley and against the Lackawanna, but in each an appeal has been taken to the Supreme Court.—"Boston News Bureau."

The Wage Scale in the Coshocton District

SYNOPSIS—A rate of 55c. for run-of-mine machine-mined coal for wide work is secured by the Coshocton miners. The allowances for narrow rooms and car pushing are of much interest.

The following agreement was reached by the miners and operators of the Coshocton district of Ohio and was signed on Apr. 12, 1915, after a strike of over a year. The text is given almost word for word throughout, omitting, however, the preamble and all references to the Columbus agreement of Mar. 10, 1898, and the scale committee's report of July 3, 1914. The agreement will regulate wages till Mar. 31, 1916, that date closing a period of two years since the previous contract expired. It applies to No. 6 bed in Coshocton County, Ohio.

PICK-MINING SCALE

Mining, per ton	$0.716
Driving entry, taking top or bottom 5 ft. high from rail, per yard	2.34
Driving entry, under top, per yard	1.73
Break-throughs, between entries, for coal, per yard	1.73
Room break-throughs, single-entry system, for first break-through, per yard	1.73
Room break-throughs, single-entry system, after first break-through, per yard	1.00
Room break-throughs, double-entry system, per yard	1.00
Room turning, per yard of neck	.88
Rock shot in room necks, two yards	1.50
Four-yard wide places, per yard	1.05

CHAIN-MINING MACHINE SCALE

Cutting, wide work, per ton	$0.11
Cutting, narrow work, per ton	.13
Drilling, shooting and loading in rooms, per ton	.44
Drilling, shooting and loading in entries, per ton	.503
Room turning, cutter and loader, entry price	.503
Break-throughs, between rooms, loader, per ton. Entry price is based on 12 ft.	.471

THREE-RUN WIDE PLACES

Cutting with chain machines, three-run wide places	$0.16
Drilling, shooting and loading, three-run wide places	.538

INSIDE DAY-WAGE SCALE

Tracklayers, drivers, trip-riders, bottom cagers, water haulers, machine haulers, timbermen, wiremen and motormen, per day	$2.84
Tracklayers' helpers, per day	2.62
Trappers, per day	1.32
Pipemen, for compressed-air plants, per day	2.77
All other inside day labor, per day	2.62

OUTSIDE DAY-WAGE SCALE

Blacksmith, per day	$2.84
Blacksmith's helper, per day	2.18
Trimmers and carpenters, per day	2.49
Dirt dumpers, drum tenders and pushers-in, per day	2.22

RULES

Rule 1—Eight hours shall constitute a day's work and all mines may operate six days a week. An eight-hour day means eight hours' work in the mine at usual working places for all classes of inside day labor. This shall be exclusive of the time required in reaching such working places in the morning and departing from the same at night. Drivers shall take their mules to and from stables, and the time required in doing so shall not be regarded as any part of the day's labor, their work beginning when they reach the change at which they receive empty cars; but in no case shall the driver's time be docked when he is waiting for such cars at the point named.

Rule 2—Operators shall remove water from working places at the starting time or pay the miner a fair price for so doing, to be fixed by the miner and mine boss. The operators shall furnish facilities for handling the water when the miner is required to remove it. When water is bailed in barrels by the miner, 5c. per barrel shall be paid.

Rule 3—When bone coal and slate fall unavoidably in the working place it shall be removed promptly by the operator, or the miner shall be paid at the rate of inside day labor for so doing. This rule shall not apply in cases where it is determined that the bone coal or slate comes down through careless drilling, shooting or posting.

Rule 4—The price to be paid for clay veins, bottom rolls or horse-backs, shall be determined between loader or miner and mine boss. If they fail to agree the price shall be settled by the mine committee and mine boss.

Rule 5—Where a miner, loader, machineman or other employee, upon whose work other employees of the mine are dependent, absents himself from duty for two consecutive days without giving advance notice when possible to the mine boss, he forfeits his position. Sickness and unavoidable accidents are excepted.

Rule 6—Machine loaders shall not be charged for blacksmithing.

Rule 7—There shall be no free turns allowed in either rooms or entries. The turn must be made uniform at least once each week.

Rule 8—The check-off for the United Mine Workers' organization shall remain in force and be observed; the same to be deducted as a percentage of earnings. This is to include all dues and assessments for the organization.

Rule 9—The machinemen shall be required to cut coal level and close to the bottom and in no case shall the thickness of coal left exceed 4 in., except in case of pots or other extreme variations, and all machinemen leaving more bottom than the amount specified must lift the same, or it will be lifted at their expense. In cases where the mine boss or superintendent orders a greater thickness than 4 in. left, the company shall take care of it, and where the bottom left is sulphurous or unmarketable, the miners may call the attention of the mine boss to it and endeavor to arrive at an agreement for its removal or retention. In case of sprags being left by a machineman, he shall be notified by the loader, and if he refuses to remove them immediately, the loader shall do so and be allowed 50c. for so doing, said amount to be deducted from the machine runners. When any machine runner leaves 6 or more sprags in any one pay, he shall be removed from the machine and his services disposed of as deemed best by the superintendent of the mine.

Rule 10—The company shall provide shields for covering the cutter head of machines. The machineman shall be required to remove the bits from the chain cutter head, or place the shield over the cutter head to make the machine safe for removal. Any machineman failing to carry out this rule may be removed from the machine without question.

Rule 11—No strike or suspension of work except it be because of the failure of the employer to pay on the regular pay day shall take place at any time in this sub-district until the district miners' official and the operator have met and failed to adjust the dispute. But it is understood that the meeting of the official and the operator shall be held within one week from the date when the said meeting was requested by either party thereto.

Rule 12—All machine loaders shall be accorded two rooms for each two men, and the operators pledge themselves to provide two rooms for each two men at the earliest possible moment, but in the event of territory becoming scarce through a squeeze or by reason of striking a horse-back, or any other unavoidable obstacle, this shall not be construed so as to diminish the output of the mine.

Rule 13—Where a miner is required to make the height above the top of the rail 5 ft., $0.8776 per yard shall be paid for shooting and loading rock, 18 in. or less in thickness in three-run wide places and $0.9473 per yard shall be paid for this work in four-run wide places. Excess over 18 in. shall be paid for at the rate of 5c. per inch per yard.

Rule 14—All work 18 ft. wide and under 24 ft. shall be paid for at a rate of 2c. per yard over room price for loading; machine runners shall be paid narrow-work price, but when the company orders a place driven 24 ft. wide the pay of the cutter and loader shall be adjusted accordingly.

Rule 15—The company has the right to put two men in entries where isolated, to cut and load coal and move their own machines.

Rule 16—Daymen are to do whatever work about the mine the management may require, so long as they are paid scale price for the work.

Rule 17—A turn rail shall be laid in all break-throughs and rooms after the first cut of the machine is loaded out, except in room break-throughs; when desired by miner a turn rail shall be laid as soon as a cut is made, unless a second cut is unnecessary.

Rule 18—Entry loaders shall have two places to load from.

Rule 19—In case of local or general suspension of mining either at the expiration of this contract or otherwise, the engineers, firemen, pumpers and other men necessary to keep the mines in shape, shall not suspend work, but shall, when

the mine is suspended, fully protect and keep in repair all the company's property under their care, and operate fans and pumps and lower and hoist such men or supplies as may be required to keep up steam at the company's coal plant; but it is understood and agreed that the operators will not ask them to hoist any coal produced by nonunion labor for sale on the market. The rates to be paid for such work are to be those in effect at the time of suspension, subject to any subsequent settlement.

Rule 20—When necessary to hold meetings at the mine and the miners so desire, one to four hours of one afternoon each month shall be allowed for the purpose of holding such meetings. Such afternoon shall be agreed upon between the management and the miners at the different mines. No other meetings than as herein provided shall be held at any mine during working hours.

Rule 21—Any new rules, local or general, other than contained in this agreement, governing the scale or conditions of employment in Sub-District No. 6 of Ohio shall be mutually agreed to by the operators and members interested, and said rules, before being enforced, shall receive the endorsement of the officials of the operators and those of District No. 6 of the United Mine Workers of America.

Rule 22—Where coal is lost owing to a fall or otherwise, through no fault of the miner, cutter or loader the company shall pay for work actually performed but in no case shall the said amount exceed the average wage received per day for the pay.

Rule 23—The regular pay day shall be on or before the tenth and twenty-fifth of each month. All pay shall be in legal currency. Employees shall receive a statement of their account on or before payday, the statements being retained by the employees.

Rule 24—Operators may require machine runners to cut on idle days in case of breakdowns or unavoidable accidents.

Rule 25—The mines of this district shall begin work at 7:00 a.m., working until 11:00 a.m., and beginning at 11:30 a.m. shall work until 3:30 p.m.

Rule 26—Where the company furnishes iron track instead of wood, the miners or loaders agree to lay it under the same conditions as the wooden track is now laid. Iron rails shall be furnished in lengths not to exceed 12 ft. and not more than 16 lb. to the yard. All rails, spikes and ties shall be delivered to the working-places in same manner as at the present time.

Rule 27—The miners agree to load out clean coal. In case bone coal, slate, sulphur or other impurities are sent out by a miner, it shall be the duty of the trimmers to call the attention of the weighman to that fact, who shall thereupon mark the record of the mine car on the daily weight sheet so that the miner may have due notice. For the second offense he shall be fined 50c. and for the third offense in six actual days' work, he shall be fined $2.50 or at the option of the mine boss may be suspended for three days. Should a miner or loader either willfully, carelessly, negligently or maliciously persist in loading impurities, he may be discharged. Should there be any question as to discrimination in the enforcement of this rule, it shall be taken up for settlement by the district officers of the United Mine Workers of America and the operator. The fines shall be paid by the company into the burial fund, and no fines shall be remitted.

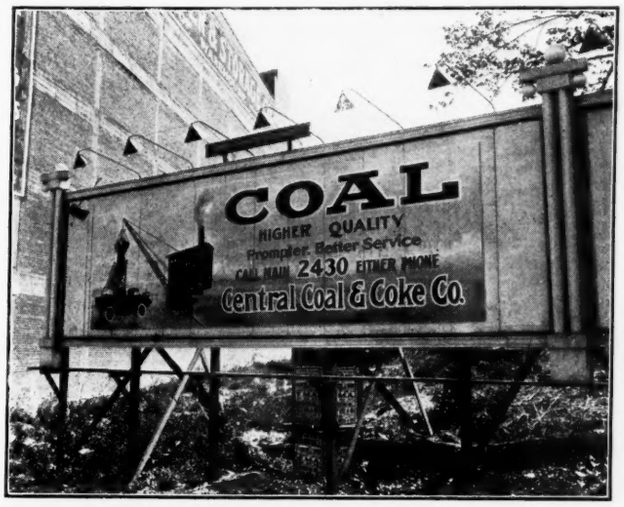
Rule 28—The pushing price shall be 4c. per ton, to be deducted from the mining or loading price in either pick or machine mines where the company takes the load from the face of the working-place. Otherwise the miner or loader is to receive the empty at the room switch. Where necessary, on account of physical conditions, the company will assist the miner in placing the empty car at the face of the working-place.

Rule 29—Where in either pick or machine mines the company requires the entry or break-throughs between entries driven double shift, $0.3332 per yard extra shall be paid.

Rule 30—It is understood and agreed that under the mine-run system the coal shall be shot, gotten down and loaded in a workmanlike manner, that only clean, merchantable coal will be loaded, and that no excess of fine coal will be produced except that ordinarily made in the No. 6 Coshocton seam under a screened-coal system, this provision being in compliance with Section 978 of the General Code of Ohio. Should a loader willfully, carelessly or otherwise fail to load clean, merchantable coal, and to prepare it for loading in the manner above set forth, he shall be notified and warned by the mine superintendent or foreman. If he then continues to load coal excessively fine as defined above, his case shall be investigated by the mine committee and the mine superintendent, and if found guilty he shall be suspended for three days, and for a further offense within 30 days his turn shall be stopped and the offense immediately investigated by the mine superintendent and mine committee, and in case they fail to agree upon the disposition of the same, his case shall be taken up by the general superintendent and district or subdistrict officials. If found guilty, he shall be suspended for two weeks, and in case he still persists in so doing his turn shall be stopped and he shall remain idle until a final disposition of his case is made by the superintendent and the officers of the United Mine Workers of America.

Retail Advertising in West

The Central Coal & Coke Co. has been indulging in quite an elaborate advertising campaign in Kansas City. Uptodate concrete and metal billboards, all electric lighted, have been installed by the company everywhere. Each board has a painting showing some feature of the company's service. The accompanying photograph is a



CONCRETE ELECTRIC-LIGHTED BILLBOARD

board which shows the method of loading trucks by crane.

The Central Coal & Coke Co. has received many comments on the neat and attractive appearance of the signs. Most of the boards are rented for only a few months in the year, but a few continue in service during the summer, the emphasis of continued appearance before the public being valuable.

Coal Situation in Brazil and Chile

Since the beginning of the European war, says Consul General A. L. M. Gottschalk, of Rio de Janeiro, in *Commerce Reports*, the scarcity of coal in Brazil has been so great and prices have risen to such an extent that there has been talk of converting a number of local coal-burning plants to use other fuel. The Central R.R. (government owned) is trying oil and has recently put into use 15 oil-burning locomotives; the Brazil R.R. (southern), it is said, now burns wood almost exclusively.

The coal used here has been principally Cardiff or Newcastle. It is said on reliable authority that a minimum of 107,780 metric tons (1 metric ton = 2204.6 lb.) of coal per month is consumed here, the chief consumers being the various foreign steamers, the local steamship lines, the railroads and the Brazilian navy. Present prices of coal are about $14.60 laid down in Rio de Janeiro, of which $8.76 to $9.73 is freight and marine insurance.

The following table shows the quantity, in metric tons of 2204.6 lb., and the value of the imports of coal into

Brazil from all countries and from the United States, and the coal imports at Rio de Janeiro during 1913 and 1914:

	Imports into Brazil					
	Total		From United States		Imports into Rio de Janeiro	
Years	Tons	Value	Tons	Value	Tons	Value
1913	2,262,347	$19,505,066	274,798	$2,162,098	1,293,346	$10,617,588
1914	1,540,126	10,347,085	260,594	1,815,806	900,332	5,911,903

It would seem advisable to keep a large quantity of American coal—say, 100,000 metric tons per month—on hand in Rio. Several American exporters might unite in sending this amount, or arrangements might be made to have several large dealers in Rio combine on a standing order for a specified amount of American coal per month for a term of months, which they would handle as their own speculation. It would be necessary for American coal dealers to make every possible concession in the matter of terms. Ample accommodation in the way of yards, coaling appliances, etc., could be had here by arrangement with some large local firm. (A list of coal importers of Rio de Janeiro may be obtained from the Bureau of Foreign and Domestic Commerce or its branch offices.) Credit ratings of Brazilian firms will be supplied by the National City Bank, of New York.

There is some preference shown here for English coal, not because of any particular superiority as to its steaming qualities, but because it is always sent here in regular-sized lumps (screened), which fit the grates in use in the country. Some people here make the objection to American coal that it is of greater friability than the British and breaks up during transportation; but this idea is probably due largely to the American system of shipping what is called run of mine, or unscreened coal, of non-uniform sizes.

Proposed Demands of Anthracite Miners

United Mine Workers' leaders have taken up the question of demands they propose to make on the anthracite operators at the expiration of the present contract next April, and have, according to report, agreed on the leading points.

The present agreement, made for a four-year term, expires on Apr. 1, 1916, which is Presidential year, and it has been said the miners' union would try to repeat the game it played so successfully on Mark Hanna in the McKinley campaign. At that time John Mitchell scared Mr. Hanna and the politicians into a hurried settlement which made important concessions to the miners. It is not likely an ulterior program of this kind will have any influence on the negotiations next year. Things are different in many respects.

The 1903-1906 and to an extent the 1909 agreements between the anthracite miners and operators were carried out fairly well by the men, but the agreement of 1912 has been violated by the miners almost continually. The last agreement was modified in some particulars at the instance of the miners to the detriment of themselves, operators and the anthracite industry.

Aside from this the men have not lived up to their agreement, and it has been plainly demonstrated that the leaders could not control them. Button strikes and all sorts of irregularities have occurred which have cost the men largely and the producing anthracite companies hundreds of thousands of dollars.

The miners' new demands include the old check-off proposition, before every conference since 1903, and always refused by the operators. The proposition, baldly, is that the operators shall collect the union dues from the miners out of their wages and pay it over to the leaders. The proposition is said to be illegal in this state, but besides this, the operators, who have always refused to recognize the union in any of the agreements of the last 12 years, do not propose to strengthen it by collecting dues out of miners' and laborers' wages. The other demands are an eight-hour day, an increase in wages and total abolition of the conciliation board.

Complete abolition of the board of conciliation would be a calamity. The effectiveness of the board was fully proved in 1903-1912, during which period it almost demonstrated the futility of the union as an agency between the operator and the miner. In 1912 the miners insisted that the board's power and prerogatives should be shorn and its efficiency has been less in the last three years than in the former 12 years since the mine commission award.

The operators will probably not take up the question of the new agreement until the early months of 1916. As a condition precedent to any negotiations they should insist that the body they deal with next year has the power to bind the miners to the new agreement, as well as the responsibilities which attach to parties who assume important contractual relations.—"Philadelphia News Bureau."

Recent Legal Decisions

West Virginia Wage-Payment Law Valid—The West Virginia statute which requires coal operators and other employers to redeem wage checks in cash is a valid regulation. (West Virginia Supreme Court of Appeals, Atkins vs. Gray Eagle Coal Co., 84 Southeastern Reporter 906.)

Places of Refuge in Indiana Coal-Mine Entries—In a suit against an Indiana coal operator for injury to a miner, based on breach of the operator's statutory duty to provide places of refuge in the side-walls of entries where only a single hauling track is maintained and there is not at least 3 ft. clear space between the sides of cars and the wall, it is not incumbent upon plaintiff to show that the operator had notice that the clearance space was less than 3 ft. or that it was practicable to provide places of refuge. It is a matter of affirmative defense to show the impracticability of making such provision. (Indiana Appellate Court, Vandalia Coal Co. vs. Coakley, 108 Northeastern Reporter 382).

Contributory Negligence of Injured Miner—The fact that there was danger in a miner remaining at work, on account of lack of props, does not necessarily bar his right to recover for injury received through falling of coal, unless the danger was so imminent that an ordinarily prudent miner would have refused to continue work in the same circumstances. Nor does an oral statement made by him after the accident, to the effect that he had been foolish in attempting to cut through the vein of the coal in its condition, necessarily preclude recovery, although the statement might be considered in determining whether he acted as a prudent man would have acted. (Kansas City Court of Appeals, Runyan vs. Marceline Coal & Mining Co., 172 Southwestern Reporter 1165.)

Loyalty

By Michael Bernard

Its value, at the very best,
In some small measure may be guessed,
But never certainly expressed
  Behind the dollar sign.
Still, while it seems to mean so much,
It's not a thing that one can touch,
Like timbers, engines, rails and such
  Equipment for the mine.

Although so subtle and unseen,
It marks the difference between
The living man and the machine,
  The worker and the cheat;
And oftentimes this simple thing
May cause the balance beam to swing
From failure to success and wring
  A triumph from defeat.

It's vain to strive to dam the tide,
And doubly vain to try to hide
This blend of honesty and pride
  When it has shown its face;
For observation clearly shows
That everywhere its spirit goes
The workers' strike with harder blows
  And set a swifter pace.

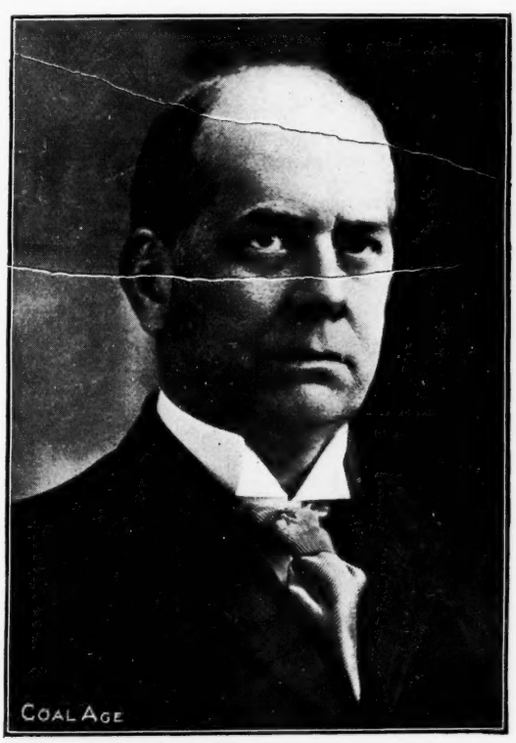
Although with such importance fraught
And everywhere so widely sought,
It's something that can not be bought
  By gold or hope of gain;
Instead, it wields its power where
Employers' dealings all are square,
Where every rule is just and fair
  And every act is plain.

Who's Who in Coal Mining

Edward W. Parker

It is doubtful if any man in the United States engaged directly or indirectly in coal mining has a wider acquaintance in the fuel industries than Edward W. Parker, for many years chief statistician of the U. S. Geological Survey. For this reason it is a matter of interest to his wide circle of friends that he has resigned as chief of the Division of Mineral Resources to accept a position in the employ of the anthracite coal companies, where he will establish a bureau of statistics to carry on a line of work similar to that which he has done for the U. S. Geological Survey.

At this time when Mr. Parker is leaving the government's service to turn his attention to important work



DR. E. W. PARKER, STATISTICIAN
U. S. GEOLOGICAL SURVEY

on behalf of the anthracite industry, a brief sketch of his earlier activities is of timely interest. He will be 55 years old on June 16, having been born at Port Deposit, Md., in 1860. His early education was obtained in the public and private schools of his native town. Later he attended the City College of Baltimore.

His first business experience was obtained as accountant in Baltimore. From 1885 to 1889 he was business manager of the *Statesman*, a paper published in Austin, Tex. It was during this time that Mr. Parker secured his first experience in editorial work. In November, 1889, he was appointed to the Eleventh Census, and in 1891 became statistician of the U. S. Geological Survey. In 1907 he was advanced to the important office of chief of the Division of Mineral Resources, which post he has held up to the present time.

Mr. Parker is descended from old English stock, his ancestors on both sides having settled in America in the early colonial days. His mother was Henrietta Hyde Donnell, a descendant of William Hyde, of England, who came to America in 1633, settling in Hartford, Conn. Mr. Parker's father was the grandson of Edward Parker, a colonel of militia in the Revolutionary War.

Mr. Parker is a member of the Cosmos and Chevy Chase Clubs of Washington and the Engineers' Club of New York City. He is also a member of the American Institute of Mining Engineers, Mining and Metallurgical Society of America, Washington Geological Society, National Society of the Fine Arts, Washington Society of Engineers, Sons of the American Revolution and is Treasurer of the Washington Academy of Science.

Along literary lines Mr. Parker's efforts have been quite extensive; his most important work includes contributions to the Geological Survey reports, "Mineral Resources of the United States" and to the Eleventh and Twelfth Censuses. He has in preparation a history of the mining industry of the United States, a volume which is being prepared for the department of economics and sociology of the Carnegie Institute.

In his new field of labor Mr. Parker's attention will be devoted to the organization and operation of an information and publicity bureau for the hard-coal companies. The good wishes of his host of friends throughout the American mining field go with him in his new work, and we are all predicting that the American people as a whole will know more about the anthracite industry in the future than they ever did in the past.

The Establishment of Standards in Coal Mines

BY F. L. PARKER*

In order to secure a basis for the establishment of standards in coal mines, an accurate, definite and clear report of work done by miners, repairmen, drivers, etc., for 10 consecutive shifts was obtained. Good, reliable and intelligent men were chosen for these tests, and where this was impossible the report was made by an engineer thoroughly acquainted with the work. From the time the men went underground until they came to the surface at the completion of their shift, all time spent was accounted for, whether it was drilling a hole, loading a car, standing timber, waiting on the driver or deliberately wasted. For every task reported on, a definite statement of conditions was made, otherwise the record would have been worthless.

In this way standards for every task performed by the underground workers were established, and these standards have been found indispensable in determining an employee's value and his consequent compensation.

Suppose for instance a certain gangway is not progressing as rapidly in the pittboss' estimation as he thinks it should. By referring to the chart of standards he is able to tell at once whether the fault lies with the miner or is due to abnormal conditions. In either case the trouble should be eliminated, and the result would be entirely fair to both miner and boss.

By employing standards the superintendent will do much toward harmonizing the laboring element and increasing the general efficiency of the employees.

*Glen Carbon, Penn.

The Labor Situation

SYNOPSIS—The protocol has now been drawn for the ending of the strife in eastern Ohio, and the miners have already ratified it. This will end the last of the labor controversies, but after 11 months the strife will begin again and involve both the anthracite and bituminous regions. A strike has been proposed to save Lawson, the Colorado agitator, from the penitentiary.

After several weeks of parleying and discussions of all phases of the situation, the joint committee of operators and miners in the eastern Ohio district agreed on a wage scale at Cleveland late on Saturday, May 8. All the disputed points were settled, and a committee was left in charge to reduce the scale to writing for presentation to the miners at the district convenion to be called at Wheeling, W. Va., on May 11. This committee has ratified the scale as presented to them, and the representatives of miners will now meet the operators at Cleveland, Ohio, so that the agreement can be signed.

This ends the strike, which has lasted for more than 13 months. During that time a number of conferences were held and joint committees on the scale were named, but they never approached an understanding, always adjourning with the dispute unsettled. Governor Willis is given much credit for the successful ending of the strike, for it was through his efforts that the first meeting of the present series—that held at Canton—was called. He made a speech urging on both sides the necessity of arriving at an understanding, and thereafter the scale was discussed by both parties in a different spirit than that which had animated them at any of the previous meetings.

Miners Get Major Demand, but Surrender Several Hampering Provisions

The scale provides for a rate of 47c. per ton for cutting and loading coal. This is the same as that paid in the Hocking Valley and other Ohio districts and is the rate which the miners have been demanding. Eastern Ohio operators have been refusing that scale because of their inability to compete with Pittsburgh corporations that are paying 44.61c. But reductions made on "dead work" granted by the miners almost counterbalance that difference, and the operators believe that they will now be able to compete with the Pittsburgh district.

Following are some other details of the scale: The cutting rate will be 8c. per ton and the loading 39c. Reductions have been made on all kinds of "dead work." The day-work wage scale remains the same as it was in the previous agreement. Machine-men agree to reset three posts without charge and are awarded 5c. apiece for all additional posts reset.

Rooms Are to Be Narrow so that Pillars Can Be Drawn.

Rooms are reduced in width from 24 to 18 ft. The operators desired a 16-ft. room, the best results being obtained with one only 12 ft. wide; but the miners succeeded in demanding that the size be 18 ft. The operators are hopeful that they can now recover all the coal, abandoning their practice of leaving the pillars to be crushed.

The miners urged that narrow rooms would increase the percentage of slack and defeat another aim of the operators, which is to make a maximum of lump coal. This argument overlooks the fact that the operators intend to leave large pillars which when drawn will give a large amount of coal of the most merchantable size. This pillar coal could not be obtained when rooms were driven as wide as has been customary.

Entry cutting is compensated by an additional payment of 5c. per yd. Double-shift work has been reduced from 31 to 25c. per yd. Entry yardage is now 30c. under the new scale. Entries are to be 15 ft. in width, but when driven wider less yardage is to be paid. This is an important concession from the old rule under which yardage was paid in all work less than 24 ft. wide. Engineers can belong to the union or refuse to be affiliated with it at their pleasure.

The scale is to extend to Mar. 31, 1916. Operators made an effort to have it extended to Mar. 31, 1918, but were unsuccessful. Provisions were included in the scale which practically insure the mining of clean coal and which will also tend to make as large a proportion of lump as possible.

Cost to Miners' Union Was About $1,400,000

Secretary-Treasurer Green of the Mine Workers said: "This agreement brings to an end a strike that in many respects is most remarkable. For almost 14 months more than 12,000 miners have been engaged in a most intense industrial struggle. Altogether, counting the miners and their families, more than 60,000 men, women and children have been directly involved. During all that time not a single violation of law has taken place nor has one dollar's worth of property been destroyed. As secretary-treasurer of the International Union I have sent $1,004,500 in weekly installments for the purpose of feeding, clothing and caring for these thousands of striking miners and their families. In addition the district organization has supplied approximately $400,000. From outside sources another $100,000 has been supplied, which makes in all $1,504,500."

One of the important points in the agreement is a penalty for unwarranted strikes or unjust lockouts. Heretofore operators have had no redress when the miners struck, even if the strike was unwarranted. This has been changed in the new scale.

Gallagher Bill Passed by House Goes to the Governor

Much to the surprise of everyone, the Gallagher bill was finally passed by the Ohio House of Representatives by 64 to 51, the Cincinnati delegation shifting its vote and making the result possible. Governor Frank B. Willis was against its passage, and it was thought on May 6, when the vote had resulted in its favor, that its approval by the House would make impossible a settlement of the strike. But it didn't prevent the protocol being completed.

Industrial War Declared Every Two Years

It is important to point out that this settlement marks the end of the labor troubles at present. Peace is assured for 11 months. After that time we start another series of strikes, both the anthracite and bituminous regions being involved. Our present rule is a war every two years. The industrial pacifists have a task here worthy of all their skill.

Not a Breach of Law to Discharge a Man for Unionism

The Ohio Supreme Court decided on May 4 that the law which prohibits the discharge of an employee for belonging to a labor union is unconstitutional and therefore void. It was questioned in court whether the law conflicted with the United States Constitution, and the Supreme Court in a similar case decided that it did.

The majority opinion was held by Chief Justice Nichols and Judges Jones, Newman and Mathias. Judges Wanamaker and Donahue dissented from this decision. The majority said that the Ohio court's hands were tied, as the ruling Federal Supreme Court made any lower court's action of no importance.

Officials Threaten a Strike to Cause Release of Lawson

Last week it was stated in this department that John Lawson, executive board member of the United Mine Workers of America for district No. 15, had been convicted of the murder of John Nimmo and sentenced to life-imprisonment, that official having been in charge of the miners during the fighting when Nimmo was killed. There is a threat to start a strike to secure his liberation.

Seeing that it is well known that Lawson was trying, and nearly succeeded, in making the position of the men who are now working in Colorado nonunion mines unsafe and unendurable, it is hardly likely they will quit work to save him from his own actions. Those who are in the unions and in other camps might strike, but the action will only assist those whom the union has tried to injure. So the strike is likely to die a-borning.

President Declines to Give Up Governor Ammons' Letter

Joseph P. Tumulty, the President's secretary, has refused to furnish the United States Commission on Industrial Relations the letter from Governor Ammons to the President relative to the Colorado miners' strike. This was requested by Basil M. Manley, a field agent of the commission.

It is clearly the duty of the President to surrender this letter, which is a public document on internal affairs. Demand for it may be made just as rightly as for the private letters of John D. Rockefeller, Jr., to the officials of the Colorado Fuel & Iron Co. The President takes a remarkable and wholly unjustified stand. At the same time it must be confessed that it is refreshing to see him rebuke by his action the unwarranted use that Frank P. Walsh has made of documents put in his hands. Mr. Wilson has shown again that while he is an autocrat, somewhat disposed to overestimate his rights and duties, he is nevertheless thoroughly conscientious in his attitude to public questions.

Editorials

Steel Activity and the Coke Trade

The revival in iron-trade activity has reached such a point that some interesting developments in the coke trade may soon occur. So many uncertain factors enter that it is not known whether enough coke could be made, upon occasion, to supply all the blast furnaces. It is a long time since the iron trade and its related branches had an opportunity to operate at capacity. The condition was approximated in the winter of 1909-10 and again three years later, but even at that only for short periods. The last time that the industry operated beyond question at its full physical capacity was in 1906 and the first nine or ten months of 1907. Iron and steel prices were then high, but the prices paid for Connellsville coke, $2.50 to $3, were by no means proportionate.

In 1906 and 1907 the production of byproduct coke averaged 5,000,000 tons a year. The present capacity is fully 10,000,000 tons greater. Meanwhile the blast-furnace capacity of the country has increased about 8,000,000 tons, requiring approximately 8,000,000 tons more coke a year to operate at capacity. That might suggest 2,000,000 tons of coke to spare, but the beehive capacity has not been kept up. The U. S. Geological Survey recently reported a few more beehive ovens in serviceable condition in 1913 than in 1907, but the maximum number fell in an intermediate year, 1910, since when there has been a constant decrease. From time to time in the Connellsville region the coal is worked out, to coke which certain ovens were built, but the ovens remain available only in case such high prices can be obtained for coke as to warrant the shipping of coal from other workings to the ovens.

There is some reason to suspect that the building of byproduct coking plants has lagged behind the erection of blast furnaces. There are scarcely any blast furnaces being built, but many retort ovens are being erected. The Youngstown Sheet & Tube Co. let a contract for 204 retort ovens only a week or two ago, though its blast furnaces have been built many years.

If the coking capacity has not increased largely at the close of the next two years, when all the byproduct-oven erection now on the boards is completed, and if the blast furnaces attempt to operate full, there will be a decided shortage of coke. The pig-iron production is now at the rate of 26,300,000 tons a year, the estimated commercial capacity being about 36,000,000 tons, while the nominal rated capacity, including unfit stacks, is well above 40,000,000 tons.

The Connellsville and lower Connellsville coke regions have increased their shipments from about 200,000 tons a week at the beginning of the year to approximately 300,000 tons a week of late, and the 50 per cent. increase has been attended by no stiffening whatever in the currently quoted prices. There is simply less coke left in the market and the price is unchanged. Perhaps if the region were called upon to ship 50,000 or 75,000 tons a week in addition to the 100,000-ton increase already experienced prices would begin to jump. Such a prediction is made in some quarters. The labor supply, it is said, is quite insufficient to operate the existing ovens at capacity.

Our Coal Exports

The far-reaching influences of the war, together with the persistent efforts of some of our large coal companies, are at last having their inevitable effect upon our export coal trade.

At the beginning of the war, it seemed as if the inactivity of business was to be stimulated by the demands from foreign countries; inquiries for large amounts of coal poured in, while ten or twelve of our selling companies sent men abroad and to South America to investigate the situation and arrange for subsequent sales.

As an immediate result, our coal exports increased quite rapidly for the first three months of the war, only to meet eventually with several large-sized stumbling blocks in the way of credits, lack of banking facilities, resumption of British coal exports, an unprecedented rise in ocean freights and a decreased consumption in foreign countries, owing partly to the effects of the war and partly to enforced economies in consumption.

Now, however, it seems as if we had actually begun a steady increase in our coal exports and that our coals were about to take their rightful place in the world's markets.

Our coal-selling agencies have at last shown some signs of understanding the methods of foreign purchase and usage, banking facilities have been furnished, our coals have been tested and proved, while the stocks of coal in foreign countries have diminished and industries have been stimulated to some extent. Ocean freights are somewhat easier, the entrance of coasting schooners and steam colliers into oversea trade has added to the available tonnage, while the increase in price of British steam and gas coals, from 75 to 100 per cent., has been an additional factor.

The opening of an office in New York by the Italian state railways and the actual purchase of a large block of tonnage by the Italian government for marine and shore use have given an added stimulus to our export business.

At least one large contract is practically made with French buyers, while there has been a steady and increasing flow of coal to the east coast of South America.

Gas-coal users are also looking to the United States for their fuel; considerable coal of this description has already gone to the east coast of South America, and now the Chilean gas companies are making inquiries. At least one trial shipment of Pennsylvania coal has been arranged for to compete with Australian coal—a difficult matter, as the latter is an extremely satisfactory fuel for this use.

The following figures (Canada excluded) will show the fluctuations in our coal exports since the beginning of the war:

EXPORTS OF AMERICAN COAL

1914	
July	334,128
August	442,080
September	654,590
October	372,336
November	329,890
December	267,769
1915	
January	268,935
February	282,294
March (Baltimore, Philadelphia, Hampton Roads)	405,437

For April, the Philadelphia figures are not yet available; the Baltimore exports were 193,293 tons, while at Hampton Roads the exports for 28 days were 365,534 tons, or a total of 558,827 tons.

It cannot be too often repeated that we must own or control ocean transportation facilities if we are to increase our coal exports on a large scale. The markets are there; we have the coal; we must also have the means of getting the coal to the markets at a sufficiently low cost.

A step in the right direction has already been made by one of our large selling agencies in forming a permanent combination with certain large British coal and steamship owning interests, while two or three other of our companies are having colliers built for the foreign trade. But we must do more—we must show our confidence in foreign countries and their enterprises by money investments that will give us needed influence and prove that we are in the export business permanently.

Coastwise Contracts

The placing of a large power-house contract in November at a price understood to net $2.70 f.o.b. for an 18-month period foreshadowed the dullness and the low range of prices that have prevailed this spring in the coastwise coal trade. The lack of any consistent policy among the operators during 1914, particularly in the Pocahontas and New River fields, clearly indicated another off-year unless something radical would take place.

A sharp advance in coastwise freights the latter part of January did give a snap to the market, but when it was realized that once the weather cleared there would be enough bottoms for all the business offering, the flurry ended. Rates remained on a $1 basis, Hampton Roads to Boston, for several weeks, and during that time it was practically impossible to secure transportation at anything like a competitive rate for the season.

As a result the shippers who had little or no transportation under control could do nothing but bear the market and advise their customers to withhold purchases for the contract year until conditions settled down. On the other hand, the shippers who did control transportation urged buying, and in order to encourage it they discounted current freights quite liberally, but still made their season delivered prices 10@15c. up from the 1914 level.

As a consequence, the contract season in New England this year falls into two parts—the January-February period, when contracts generally were on a higher basis than a year ago, and the period since, when freight sagged to the normal basis of 75@80c.—and contracts have been either on the same basis as last year or somewhat less.

The award of the Panama R.R. contracts on a $2.70 basis really blazed the way, but it was not until February when the lowest bid on the Portsmouth, N. H., navy yard contract (No. 89) was $3.65, and later still when the Charlestown, Mass., navy yard supply (No. 79) was placed at $3.49 alongside, that it became apparent this would be another dull year with prices weak and fluctuating.

Any analysis of contracts placed since February, especially on the really comprehensive orders, shows a base price from 5c.@10c. less than last year. In April, 1914, although trade was dull, Hampton Roads standard coals were rather firmly held at not less than $2.80 f.o.b. There was a pessimistic undertone, yet until June prices were reasonably well maintained. There was evident on the part of operators a disposition to get their price or keep coal in the ground. This spring, however, there is greater effort to sell and correspondingly more diffidence on the part of buyers. Business conditions show very little improvement, and purchasing agents are inclined to scoff at any attempt to renew last year's prices.

The Boston Elevated Ry. (No. 528) is understood to have bought late in March at least 5c. less than last year, and so in the case of the Central New England Ry. The former buys f.o.b. loading port and the latter f.o.b. the mine, and for that reason they are perhaps not so significant, but the American Printing Co., Fall River, notwithstanding a higher freight market, is understood to have bought delivered on the same basis as in 1914. Instances could be multiplied where this has been the case on reasonably large orders, although on smaller business, where requirements for regular and frequent shipments are not so pressing delivered prices have lately been 10c. or so less than last year. The textile mills generally, particularly those that use Pocahontas and New River coals, have been able to close at 5c.@10c. less.

The City of Boston, for its harbor institutions, has been trying hard to secure an acceptable price. The order (No. 461) is for 40,000 tons, and already bids have been twice called for and twice rejected. Last year a part of this contract was awarded at $3.47 alongside, and the lowest price thus far this year on New River or Pocahontas is $3.67. The contract is now about to be advertised a third time. This, it should be said, is practically all for points that are on too shoal water for larger barges.

Local contracts, for delivery by team in Boston, have been much lower than last year. Prices on such business as the Boston postoffice (No. 437) and the Boston schools (No. 566) are due only in part to conditions at wholesale. The main reason is an unhealthy rivalry between dealers.

In summary, season prices are lower than last year. Whether a low range will continue depends largely on the export trade. If that develops as many think it will, there may well be a stronger tone to the market. The bulk of the year's business is placed, however, and operators will still have to look to "another year" for better returns, at least from the coastwise trade.

Coal Preparation

The June 5 issue of COAL AGE will be devoted almost entirely to the subject of coal preparation. We want to make this particular number a really interesting and valuable compilation of engineering facts relative to this interesting and important phase of coal mining. All of our readers, therefore, are invited to submit articles on the preparation of coal and especially describe successful installations with which they are acquainted. Both anthracite and bituminous practices will be discussed.

Sociological Department

Republic Iron & Steel Co. Meet

The front cover shows two views of the Republic Iron & Steel Co.'s first-aid meet held at Republic, Jefferson County, Ala., on Mar. 27, 1915. The contesting teams were from the mining towns of Palos, Republic and Sayreton, all of which belong to the Republic Iron & Steel Co.

Palos had 4 teams of 5 adults, and the boys also had a team of the same size. Republic had 13 teams, of which 9 were of men, 1 of boys and 3 of women. Thus there were in all 90 contestants. There were nearly 1500 people on the grounds, the weather being most favorable for the event. A big barbecue dinner was served on a table 200 ft. long, the meat having been barbecued all through the previous night.

The Palos team carried off the honors. The women's teams acquitted themselves with great credit. First-aid work is spreading rapidly in Alabama, not only at the mines, but on the railroads and at the public schools. There are three oxygen-apparatus teams at Sayreton, two at Republic and one at Palos.

For four years the Republic Iron & Steel Co. has been training first-aid teams. It awards a gold-plated button or pin to all the men, women or children who show the desired proficiency. At intervals of two weeks a free motion-picture show is given in the first-aid hall of every mine village.

OFFICIALS AT PALOS MEET OF REPUBLIC IRON & STEEL CO., SAYRETON, ALA.

From left to right, in rear—Dr. W. H. Godwin, physician and first-aid trainer, Warner division; R. C. Wynn, superintendent, Warner division; C. T. Fairbairn, manager, Southern district, Republic Iron & Steel Co.; F. G. Morris, general superintendent of coal mines, Southern district; W. T. Burgess, foreman of rescue work, United States Bureau of Mines; W. W. Kicker, superintendent, Palos division; J. G. Meagher, superintendent, Sayreton division; Dr. J. S. Norton, physician and first-aid trainer, Sayreton division; Dr. John W. Snow, physician and first-aid trainer, Palos division. From left to right, in front—R. E. Butler, engineer of coal mines; J. H. Lloyd, mine foreman No. 2 mine, Warner division; A. H. Verchot, mine foreman, Warner division; George Burgess, mine foreman, Palos division; Frank Ferguson, mine foreman, Sayreton division.

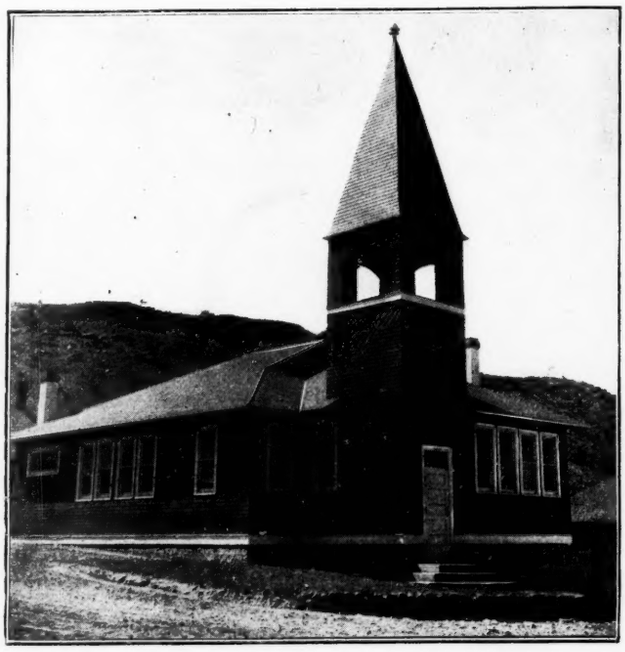
Mining Village Churches of the Colorado Fuel & Iron Co.

In the mining camps of the West little progress has been made in developing the needed religious restraints. Unfortunately the nationalities are so numerous and the desires of the people in this matter so variant that it is hard to provide for everyone, whereas in the matter of

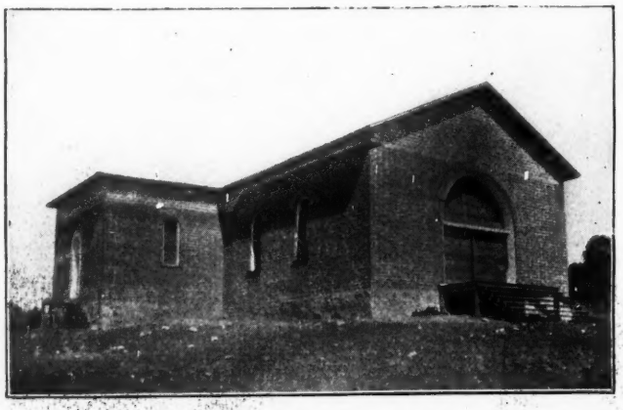
GUILD HALL AT CRESTED BUTTE, COLO.

schools where all are collaborating and contributing the work is far more easy.

However, the need is not inconsiderable even economically, for there is no discontent which is so certain to bear good fruit physically, mentally and morally than discontent with oneself. This is or should be the work of the church. All political and labor movements are for the



CHURCH AT SUNRISE, WYO.



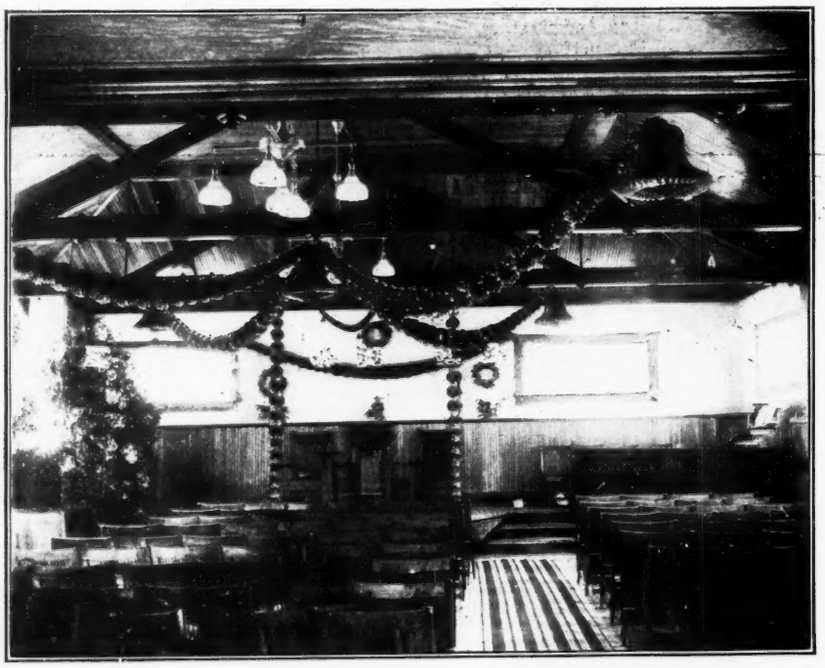
CHURCH AT FIERRO, N. M.

reform of other people, to make others perform certain acts which we believe will help *us*. Religious movements are, on the other hand, personal. The reformation sought is not a violent external restraint of the individual, but an increase of his own personal control.

No mining camp can therefore expect to do its bargaining, individual or collective, unless its members have been impressed with their need for such constraint, which makes the operator less autocratic and the workman less unfairly self-assertive. In fact, the relation religion bears to politics and industry is most vital as it provides the material of citizenship out of which is derived a right-thinking electorate and an intelligent, industrious and frugal personnel, without which both state and commerce must come to a disastrous end.

Where else can be taught the rules of moral accountability, fairness of judgment, the recognition of others' rights, the reciprocal duties of employers and employees, of parents and children, of the governing and the governed, of tradesmen and customers? Sometimes, of course, other purposes than these get the upper hand, and the churches seek to be political and industrial rather than to prepare the material out of which the best-governed state and a well-ordered industry will proceed; and the result is not all that it should be. But the attempt to do without such restraints entails more damage than can ever rise from a misapplication of the purposes of religion.

The Colorado Fuel & Iron Co. has erected several churches at its camps, of which a few are here illustrated.



INTERIOR OF CHURCH AT SUNRISE, WYO.

Discussion By Readers

Mining Laws and Legislation

Letter No. 3—Referring to the interesting point brought out in Ostel Bullock's letter, COAL AGE, Apr. 10, p. 650, in regard to the legal irresponsibility of the mine superintendent, in contrast with the burden of responsibility imposed by law on the mine foreman, permit me to say that although the operators of Pennsylvania coal mines are not legally responsible for any injuries sustained by miners through negligence in respect to the manner in which a mine foreman performs his statutory duties, yet if any condition affecting the safety of employees is brought to the attention of the mine owner or the superintendent he is legally bound to take proper steps to correct it promptly.

This is the view taken recently by the Court of Common Pleas of Fayette County, Pennsylvania, in the case of Price vs. Etna-Connellsville Coke Co., 42 Pennsylvania County Court Reports, 664—a suit in which plaintiff recovered damages for injury to himself while bringing loaded cars out of a mine. The case was argued on the theory of negligence of the company in permitting a pile of slate and gob to remain between the track and a rib and maintaining insufficient clearance.

Art. 20, rule 3, of the Pennsylvania bituminous mining act of May 15, 1893, under which this case was tried, makes it the duty of the mine foreman to "see that the entries at places where road grades necessitate sprags or brakes to be applied or removed shall have a clear level width of not less than two and a half feet between the side of the car and the rib, to allow the driver to pass his trip safely and keep clear of the cars there."

Under this rule the court held that the defendant company would not have been liable to plaintiff, except for the fact that it was chargeable with the knowledge that the mine foreman had negligently failed to observe the requirements of the rule. And since the duty to maintain sufficient clearance was statutory, it was decided that plaintiff could not be deemed to have assumed the risk of being injured on account of the dangerous condition, although he may have known of its existence.

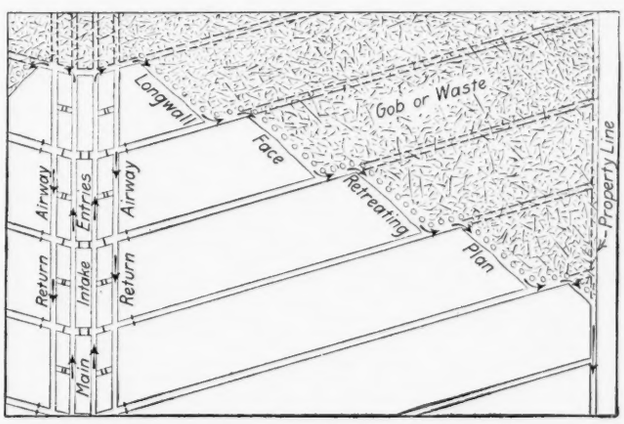
A. L. H. STREET,
St. Paul, Minn. Attorney.

Longwall in Pittsburgh Seam

Letter No. 7—I was much interested in reading the letter of O. P. Rator, in reference to this subject, COAL AGE, Apr. 17, p. 692, and to observe that he has the same opinion as myself in regard to the longwall advancing system not being adapted to the working of the coal in this seam.

I have been studying this question for some time, and have failed to see how it will be possible to prevent the occurrence of a squeeze on the haulage road if the advancing system is to be adopted. I am convinced that this could only be done by building cribs about 6 ft. apart and filling these in with rock that could probably be obtained in sufficient quantity from the brushing of the roof on the roadways and from nearby falls. However, I concluded some time ago that it is needless to consider further the advancing plan for working the coal in this seam. I am satisfied that no one who has had experience in the working of the Pittsburgh seam would attempt to mine the coal by the longwall advancing method, except possibly someone who has more money than brains.

I would like to explain briefly my idea of working this seam of coal on the retreating plan. I will confess at the start, however, that the plan has the disadvantage of not yielding a large output of coal until the boundary line of the property has been reached and the longwall face developed. I believe that there would be a benefit derived by the adoption of this plan in the long run. I realize fully that the expense of laying out the plant



PROPOSED LONGWALL-RETREATING PLAN

and installing the necessary machinery would mean a considerable investment at the start, but much of this preliminary work could be postponed and the expense curtailed until the mine reached a paying basis, when the improvement could be made in the equipment. The coal mined from the entries, in the advancing system, would help to meet the expense.

In regard to the plan I have mentioned and attempted to illustrate in the accompanying figure, I would drive the main entries four abreast on the face of the coal. The two center entries should be made the intake and haulage roads for the two sides of the mine, while the entries on each side of these would serve as the return air-courses for the same. If the mine is opened by a shaft, these main entries should be driven in both directions from the shaft bottom. The main entries should be driven 9 ft. wide, and cross-headings turned at an angle of about 25 or 30 deg. with the face cleats on each side, as shown in the plan. These cross-entries should be driven at such distances apart as to afford a working-face of about 100 to 150 ft. in length. When these cross-entries have been driven to the property line, a heading should be driven along the line and the working-face opened up at the far inby corner.

The line of working-face should be stepped, as shown in the plan. The purpose of this is to reduce as far as possible the liability to a squeeze occurring as the work advances and to provide at the same time a steady settlement of the roof as the face recedes from the boundary line. The old broken posts may be used for the building of cribs, which should be spaced about 20 ft. apart, along the rear face to prevent the roof from swinging the timbers toward the face. I hope this plan will be clear as I have explained it.

JOHN OLDROYD.

Farmington, W. Va.

Firing Shots in Mines

Letter No. 2—Some time since there was published in COAL AGE (Vol. 6, p. 665) a description of a chemical fuse igniter, which, it was explained, had been invented for the purpose of firing shots "in mines generating gas and in dusty mines where the coal is highly inflammable." To the article was appended a note by the editor suggesting the discussion of the question, "Is the idea practicable?"

Thus far I have only seen one letter referring to this matter. I want to say most emphatically that, in my opinion, the idea is wholly impracticable and cannot be safely applied to the blasting of coal under any conditions. Indeed, were I in a position of authority, as mine inspector, superintendent, foreman or other official, I would not hesitate to debar such practice from any mine in my charge.

In my opinion, the use of black powder should be entirely eliminated from *all* coal mines generating gas, but especially dusty mines where the coal is highly inflammable. I am convinced that only permissible explosives and the most approved system of electric shotfiring should be permitted in such mines, and in order to insure the safe and successful operation of the mine, I believe particular attention should be paid to the following points:

1. The wire conductors should be so installed as to insure absolute freedom from accidental connection and premature explosion.

2. The system should be protected against stray electric currents from any source.

3. The system should be protected against a possible grounding of the current that would render ineffective the firing of the shots.

4. The system should be protected against any possible short-circuiting of the current for the same reason.

5. The proper voltage required to insure the firing of all the shots should be carefully determined.

Referring again to the suggestion of a chemical fuse igniter, I would say that such a method is open to the same objection as other methods of firing shots by means of fuse. Any imperfection of the fuse or any injury to the same caused in tamping the hole might make the shot hang fire. In addition to this the method suggested presents another risk due to a possible slight difference in the composition or thickness of the celluloid diaphragm, which may indefinitely delay the ignition of the charge. These risks are entirely eliminated in the use of an electric shotfiring system.

Referring to the suggestion made in this article, in regard to the danger of the powder becoming damp in the hole before the fuse is ignited, owing to the wrappings of the charge being broken by a rough and jagged drill hole, it occurs to me that is possible in any system of firing. He suggests that it should be prevented by the use of a drill that will bore a comparatively smooth hole. In practice, however, this is not always possible.

In my experience, the charge of powder should be incased in double wrappings, one of which is waterproof. Such wrappings are commonly used in the anthracite region of Pennsylvania and are called "bologna paper." By soaping the outside of the wrapper or greasing it with axle grease the danger is greatly reduced, but it cannot be expected that the charge will remain absolutely dry for a considerable length of time, such as might result from the delayed ignition of the charge.

In discussing this question, the suggestion is made, COAL AGE, Vol. 6, p. 996, that the possible delayed ignition of a charge would give an opportunity for the accumulation of a dangerous quantity of gas in the place and that this would be ignited by the blast. This objection, however, does not apply alone to the firing of shots by the chemical fuse igniter. The same condition may arise in electric shotfiring when a considerable period of time is allowed to elapse between the examination of the place for gas and the firing of the shots therein. Shotfiring in mines is surrounded by danger under the best conditions, and it should be the constant endeavor to reduce the risks in blasting instead of introducing new ones.

J. W. POWELL,
General Contractor.

Windham. Mont.

Liquor Question in Mining

Letter No. 3—I believe the liquor question as it pertains to the coal miner should be carefully studied from a moral, economical and psychological standpoint, instead of viewing it wholly in respect to its prevalence.

The consumption of alcoholic beverages is undoubtedly amazingly large among coal miners—inadequately large in proportion to their means for its indulgence. In any case, the indulgence of this habit impairs the mental, moral and physical well being of the individual. My study and investigation lead me to the conclusion that the prevalence of this evil among miners can be attributed mainly to three causes, which may be briefly described as follows:

1. The majority of those who indulge the drink habit to a greater or less extent firmly believe that its use is a material benefit stimulating and reviving the exhausted physical system after an arduous day's toil. They believe that it tones the nervous system, restores the muscular energies and invites a good night's rest in preparation for the labor of the coming day. Repeated inquiries in this regard reveal the fact that those who indulge to a moderate extent only are thoroughly convinced that over-indulgence is harmful and not to be tolerated.

2. Coal-mining camps as a rule are lacking in many needed attractions for the purpose of improvement, recreation and amusement. One of the strongest characteristics of human kind is to seek companionship and association with kindred spirits. Much as it is to be regretted, the saloon or hotel offers more conveniences and imposes less restriction on those who avail themselves of their privileges than could be found elsewhere. The convivial meetings that naturally result from these conditions invite the social glass with all its attendant evils.

3. The last and perhaps the least of the causes for indulgence is the desperation of overwhelming grief, anxiety and care. The nervous system is strung to the highest pitch by the continuous strain of the depressing conditions incident to coal mining. Some nervous temperaments require a stimulant to prevent a nervous breakdown, and these are the ones that are most liable to gravitate to the state of habitual drunkards as a result of over-indulgence. Such are often heartlessly condemned without due consideration being given to the causes that led to their downfall.

It is a recognized physical law that undue stress is always followed by extreme depression. Men of *nervous* temperament are most subject to this law. They devote their entire physical energy to the performance of what they undertake. Present welfare is ignored in the accomplishment of a desired end, which too often results in a physical breakdown followed by an irresistible craving for a stimulant. Coal mining, however, has a greater tendency to produce a *lymphatic* rather than a nervous temperament. Consequently, the average coal miner lacks the physical energy required to withstand the temptations to over-indulgence that are on every hand. The results are too well known to need description. It is useless to *preach* to these men; what they need is *health, better surroundings* and *attractive conditions* that will stimulate ambition.

To overcome the evils of the first cause mentioned, education is necessary—moral and physical. While men in this class realize the evil of over-indulgence, they do not grasp the fact that moderate indulgence saps the powers and impairs the efficiency of the human system. How such education is to be brought about is probably one of the most difficult problems in mining today. I have more hope along this line in the proper education of the young in our public schools.

In respect to the second cause mentioned, experience teaches that much good can be accomplished by the establishment in our mining camps of reading rooms, playgrounds and suitable places of amusement. These alone can effect the social uplift that is desired and provide the necessary association that is the craving of human nature, away from the harmful surroundings of the saloon and hotels. Much has been accomplished along this line by the Young Men's Christian Association, and the establishment of a branch of this organization in every mining camp would be of the greatest value to the coal-mining industry.

In a few instances, it has been argued by the management of coal mines that the entire elimination of the saloon from the mining camp would seriously handicap the operation of the mines, inasmuch as miners will have their booze. As a result, many coal miners seek those places where the saloon is permitted. While there is some logic in this argument, it must be acknowledged that the evil could be overcome by greater coöperation on the part of the management of different mines.

If coal companies, recognizing the unquestioned advantage to the industry, would unite their efforts to eliminate the saloon and the sale or shipment of intoxicating liquors in mining towns or camps, there would be no question of the success of the undertaking. If it is argued that this would be a restriction of personal rights and privileges at variance with the constitution, it should be remembered that personal rights and privileges are limited when they abridge the right or impair the best interests of the community, of which the individual is a part.

A. M. Iner.

——, Penn.

The Miner and Safety

In discussing the education of miners and their relation to the mine foreman, much has been said in reference to their attitude toward their own safety and toward the efforts made in their behalf to safeguard their work.

When passing into the mine a short time ago, I overheard a conversation between two miners that illustrates this point. They were as fine coal diggers as ever handled a pick, but more than that could not be said as they had no ambition to do anything else.

From their conversation I gathered that the old, experienced fireboss in charge of the section where these men were working had attempted the previous day to show them the importance of loading out the fine coal cuttings, or "bug dust" as it is commonly called. They had been throwing this back in the waste, and the fireboss, in trying to impress upon them the danger of a blownout or windy shot throwing this dust into the air and causing a dust explosion, explained that it had been found that each particle of fine dust that would float in the air was nothing less than a tiny gas bag.

The remarks of the fireboss were the topic of their conversation as they proceeded on their way to work. One stated with an emphasis that it is not necessary to repeat: "What do you think of that gas-bag yarn? Why, in the old man's day, miners did not know what an explosion was, or a blownout shot, and as for 'gas bags,' I guess they had none of them around. In those days, the government did not waste money hunting up dangers. There were no 'gas bags' and no explosions. They did not have a mining law as big as a family Bible—not much. I tell you, Jack, if there was less of this red tape, we would all be better off. Think of it—they even come around and tell a man how to set a post. Why, in the old man's time a miner was seldom caught by a loose piece of slate, and now men are getting killed every day."

The reply to this was: "You are right, Tom; if that old fellow was digging coal for a living and had to shovel 'gas bags' for nothing, instead of carrying that book of instructions and that safety lamp around the mine to make us believe he knows something, we would be better off."

This is only a fair sample of hundreds of such conversations in the daily life of the miner. It would seem that men would realize that conditions in mines today are wholly different from what they were in the days of their fathers. With the increased demand for coal, requiring the use of machinery and methods for its quick extraction that were not known in those days, it should be clear that the dangers of coal mining have greatly increased. A reasonable man readily understands that more precautions are necessary today than in the old days when the miner performed his work under less urgent conditions. Had the same conditions existed then as today, explosions would have been as frequent as Russian holidays.

Men who talk in this way do not realize that miners of yesterday were experienced workmen and avoided dangers of which the miner today is entirely ignorant, because he knows nothing of mining—in most cases had never

seen the inside of a mine until his cousin sent for him and brought him from the old country to dig coal in American mines. Today, the experienced miner has largely disappeared, and in his place are foreigners taken from the farm and shop and in most cases unable to speak the English language.

These are the conditions that confront the mine foreman today. His task is almost superhuman. Naturally, violations of the law are frequent, and the foreman is not permitted to discipline his men for the act, but must "find some other way." His instructions are, "Increase the output; cut down the cost; fulfill the mining law in every respect." How to carry out these instructions is his problem.

JAMES T. REYNOLDS, Assistant Foreman,
West Penn Mining Co.

Apollo, Penn.

Denies Investing for Kaiser

My attention has been drawn to the industrial news item published in COAL AGE, Apr. 24, p. 742, which is evidently taken from numerous similar publications that have appeared in various newspapers on the Pacific Coast and which contained a number of misstatements that I have been obliged to correct in most emphatic terms practically each time they have appeared. Nothwithstanding this fact, many of the papers have persisted in referring to the story again and again, presumably because they consider it interesting reading. In doing so, they ignore the fact that such a publication of an untruth has the effect to prejudice unfairly important industrial interests both of myself and others associated in the same enterprise.

Permit me to assert briefly the following facts: His Majesty, William II, Emperor of Germany, so far as I know, has never directly or indirectly invested one cent in Canada, either through me or anybody else. Furthermore, my associates and I have never had $5,000,000 invested in Canadian coal fields. Our investments scarcely amount to $1,000,000. There is no reason why these investments should be "irretrievably lost," inasmuch as they are in companies formed under a British Columbia charter, and the shareholders comprise Germans, Canadians, Americans and Englishmen.

In closing, permit me to take this opportunity of saying that, although the press of this country has invariably insisted in conferring upon me the title of "Count," my proper name is the one with which I have always had the honor to subscribe myself.

ALVO V. ALVENSLEBEN.

Seattle, Wash.

Study Course in Coal Mining

BY J. T. BEARD

The Coal Age Pocket Book

MINE EXPLOSION

Definition—A mine explosion is understood to be a violent disturbance of the atmosphere within a mine manifested by a destructive blast or rush of air accompanied by more or less flame, being the result of the ignition and combustion with explosive rapidity of gas and dust or either accumulated in the mine.

Gas Explosion—An explosion produced and maintained chiefly by gas accumulated in the mine workings and passages or mixed with the air current is described as a "gas explosion," although practically every mine explosion involves the combustion of both gas and dust.

Dust Explosion—An explosion in which the fine coal dust accumulated in the mine or suspended in the air current plays a prominent part is commonly called a "dust explosion," although it may have originated in a local explosion of gas, which is true of most mine explosions.

Few if any mine explosions are wholly due to gas or dust, but combine both of these elements in varying proportions, the character of the explosion as "gas" or "dust" being determined by the later evidences.

Development of a Mine Explosion—Explosion does not necessarily follow the ignition of gas in mine entries and workings. The firedamp mixture must, of course, be within the explosive range, as determined by the conditions in that portion of the mine. But even then a mine explosion will only take place when the **conservation of heat** is sufficient to render the explosive action self-supporting. Otherwise, a local explosion of gas or dust will expend its energy within a limited area and the disturbance will not be propagated throughout the mine.

The ignition of an inflammable mixture of gas or dust in the mine air may produce a considerable body of flame that, within the narrow confines of the mine, may gather force and generate sufficient heat to cause an explosion. **Experiment** has shown that an explosive mixture of gas and air placed in a tube and ignited at one end will burn quietly at first, then flutter or vibrate with increasing energy as the combustion penetrates deeper in the tube, the contending forces being the entering air and the escaping products of the combustion. This action, however, quickly develops sufficient energy to produce an explosion, which darts through the length of the tube.

The experiment illustrates more or less closely the development of an explosion in a mine entry or chamber. Investigation has shown that the **explosion gathers force** and probably **develops characteristic energy** within a few yards of its origin or the point where the ignition of the gas took place. This may vary from 10 to 30 yd. or more, depending on many conditions—chiefly the size or volume of air space available for the expansion of the gases of the explosion, the intensity of the igniting flame and inflammability of the mixture.

All of these factors determine severally the initiation as well as the character of the explosion and its limitations in the mine workings.

The Coal Age Pocket Book

RESCUE WORK

Entering a Mine after an Explosion—Prompt action and intelligent and effective measures are necessary for the rescue of any possible survivors of a mine explosion. The nature of the work and the great risk incurred in its undertaking demand that it shall be performed by the most experienced of the volunteers, of whom there is never any lack.

Immediately after an explosion in a mine, the following procedure is important:

1. Call for volunteers and from them choose those who are more experienced and familiar with the mine and the work to be performed.

2. At the same time, observe the mine entrances and judge of the probable effect of the explosion in the mine; examine the ventilating apparatus and have any necessary repairs made at once.

3. Collect the necessary safety lamps, tools, timber, canvas, brattice boards, nails, etc. Caged canaries or mice should also be provided, and two or more sets of breathing apparatus should make up the equipment.

4. Divide the rescuers into three parties, as follows:
(a) Apparatus men to explore in advance;
(b) Repair gang and rescuers;
(c) Supply gang to render every possible assistance.

Organize each party under a competent leader who shall be in absolute control while underground.

5. Enter the mine at the earliest possible moment—the apparatus men proceeding first and keeping from 100 to 200 yd. in the lead of the others, who must not advance ahead of the air.

6. Each section of the mine should be explored by the apparatus men to discover any possible fire therein, before restoring the circulation in that section.

As quickly as any survivors are found they must be promptly removed to fresh air and the proper restoratives applied. At the surface, physicians should be in attendance and ambulances provided for the prompt removal of those brought out of the mine.

Suggestions on First-Aid to Explosion Victims—Those trained in first-aid work are the ones who should assume charge and have absolute control of the care of any survivors as quickly as found, until the arrival of a physician. The following brief suggestions are important:

1. Be calm and quiet; act promptly but not in a hurry; keep cool and observe closely every symptom and condition.
2. Remove promptly but carefully to fresh air.
3. Do everything possible to stop bleeding.
4. Examine for broken bones before moving far.
5. Use aromatic spirits of ammonia if stimulant is needed.
6. If overcome by gas, give artificial respiration.
7. If unconscious, loosen clothing, warm and stimulate by rubbing the limbs; give no stimulant if face is flushed and pulse strong, but sprinkle cold water on face and chest. If the body and limbs are cold, use warm applications; keep the patient covered with blanket or other coverings; apply smelling salts or spirits of ammonia cautiously to the nostrils.

Inquiries of General Interest

Electric Haulage Problem

The haulage road at a certain mine is 6000 ft. in length and laid with 30-lb. rails, which are bonded with 00 wire and bonding caps or sleeves. The rails are cross-bonded every 30 ft. An electric mine locomotive weighing 10 tons and using a current of 150 amp. is run on this road. A 0000 trolley wire supplies a current of 250 volts, which returns through the rails. A substation is located at one end of the line.

I would like to ask: 1. What will be the drop in volts at distances of 2000 ft., 4000 ft. and 6000 ft. from the substation? 2. What will be the percentage of loss in each case? 3. By installing a 0000 feeder wire and allowing 6 per cent. interest on the investment, what saving, if any, would be realized, the price of electric power being 2c. per kw.-hr.?

J. L. Gunter.

Handley, W. Va.

In estimating the drop at distances of 2000, 4000 and 6000 ft. from the substation, it is necessary to calculate the trolley-drop and rail-drop separately and add the results. Then, in order to estimate the possible advantage of installing a feeder-line of the same size as the trolley wire (0000), it is necessary to calculate further the combined trolley- and feeder-drop for the same distances.

The first step in the calculation is to take from an electric-wire table the circular mils of a 0000 copper wire, which is 211,600 circ.mils. For the combined trolley and feeder wires, the circular mils is double this amount, or 423,200 circ.mils. Now, to find the copper equivalent of two 30-lb. rails, properly bonded and cross-bonded, assume a rail-to-copper ratio of 11:1; that is to say, take the rail resistance here as 11 times that of copper, for the same sectional area. Then find the combined sectional area of two 30-lb. rails as follows: Since the weight of wrought iron is 480 lb. per cu.ft., and two 30-lb. rails weigh 60 lb. per lineal yard (36 in.), the cubic contents of the two rails is $60/480 \times 1728 = 216$ cu.in. per yd. The corresponding sectional area for the two rails is therefore $216 \div 36 = 6$ sq.in.

Again, since 1 mil is 1/1000 in., and a circ.mil is the area of a circle whose diameter is 1 mil, 1 circ.mil $= 0.7854\ (1/1000)^2 = 0.0000007854$ sq.in. and 1 sq.in. $= 1/0.0000007854 = 1{,}273{,}200$ circ.mils. The sectional area of the two 30-lb. rails in circular mils is therefore $6 \times 1{,}273{,}200 = 7{,}639{,}200$ circ.mils. For a rail-to-copper ratio of 11:1, the copper equivalent is $7{,}639{,}200 \div 11 =$ say, 694,500 circ.mils of copper.

It is now possible to calculate the drop of potential for the trolley line, feeder and rail return for each required distance by using the general formula,

$$\textit{Drop of potential} = \frac{10.8\ (\textit{distance} \times \textit{current})}{\textit{circ.mils}}$$

The drop of potential is expressed in volts and the current in amperes, while the distance is given in feet. Applying this formula to the present case gives for the drop at a distance of 2000 ft. from the substation the following:

$$\textit{Trolley-drop} = \frac{10.8\ (2000 \times 150)}{211{,}600} = 15.3\ \textit{volts}$$

It is evident that the combined trolley- and feeder-drop would be one-half of this amount, or 7.65 volts, since there are two wires of equal size for the transmission of the current to the locomotive. The rail-drop is

$$\textit{Rail-drop} = \frac{10.8\ (2000 \times 150)}{694{,}500} = 4.6\ \textit{volts}$$

The above results give the drop of potential for a distance of 2000 ft. For distances of 4000 and 6000 ft. the drop will be two and three times the above amount respectively.

A comparison of these results gives the following:

Total drop without feeder, $4.6 + 15.3 = 19.9$ volts
Total drop with feeder, $4.6 + 7.65 = 12.25$ volts
Voltage saved by feeder, $19.9 - 12.25 = 7.65$ volts
Wattage saved by feeder, $150 \times 7.65 = 1147.5$ watts

The percentage of drop in each case above is:

Without feeder (2000 ft.), $19.9 \times 100 \div 250 = 8.0\%$
With feeder (2000 ft.), $12.25 \times 100 \div 250 = 4.9\%$

Assuming 250 working-days of 8 hr. each (2000 working hours) in a year, the saving in that time at a cost for electricity of 2c. per kw.-hr. would be $2000 \times 1.1475 \times 0.02 = \$45.90$.

Against this saving must be reckoned the interest or fixed charges on the investment for the erection of 2000 ft. of feeder wire. At the present time the cost of copper is very high, having risen from 12 or 13c. per lb. to 20c. per lb. The weight of 0000 copper wire is practically 640 lb. per 1000 ft., making the cost for 2000 ft. of this wire, at 20c. per lb., $2 \times 640 \times 0.20 = \$256$. The cost of erection, including poles, will be about \$4 per 100 ft., or \$80 for a distance of 2000 ft., which makes the total cost of this length of feeder wire erected, \$336.

Estimating the fixed charges on this investment as, interest, 6 per cent.; depreciation, 4 per cent., and taxes and insurance, 2 per cent., making a total of 12 per cent., gives $0.12 \times 336 = \$40.32$. This estimate makes the net saving per year, $\$45.90 - 40.32 = \$5.58$.

Since the drop in potential, the saving in kilowatt-hours and the fixed charges are all proportional to the distance, the net saving per year will also be proportional to the distance, or \$11.16 for a distance of 4000 ft., and \$16.74 for a distance of 6000 ft.

In actual practice, however, the locomotive will not be running more than from one-half to three-quarters of the actual time, depending on the length of haul and other conditions, which will reduce the saving in kilowatt-hours at the same rate, while the fixed charges must remain constant. Although the figures would then show an excess of fixed charges over the saving in the cost of electricity, it would still be good practice to add the feeder wire. The gain in the operation of the locomotive will exceed what the actual saving in power would indicate.

Examination Questions

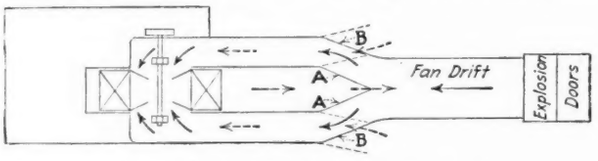
Pennsylvania Anthracite Mine Inspectors' Examination, Held at Wilkes-Barre, Apr. 20-22, 1915

(*Selected Questions*)

Ques.—What are the advantages and disadvantages of the exhaust and blow-fan systems of ventilation? What are the advantages of making fans reversible, and under what conditions would it be proper to reverse the air current? Show by plan how you would construct a fan drift so that the flow of air passing through a mine can be reversed.

Ans.—In the ventilation of a gaseous mine, the exhaust system of ventilation has the advantage that the main-intake airway can be used as the main-haulage road, which is impracticable in the blowing system of ventilation. One disadvantage of the exhaust system is that the ventilator is generally less efficient working on the warm mine air than when filled with the cooler outside air entering the mine. It is also more subject to the corrosive action of the warm, moist mine air under these conditions.

In the exhaust system of ventilation, the mine is ventilated under a pressure *below* that of the atmosphere and, on this account, the gases accumulated in waste and abandoned places readily find their way onto the main roads and airways. The blowing system avoids this trouble, the mine being then ventilated under a pressure *greater* than that of the atmosphere, by which the accumulated gases are forced back from the roads. It is frequently claimed, however, that the blowing system possesses the disadvantage that these gases expand more readily into the roads and airways when the fan ceases to work, while the reverse of this condition is claimed for the exhaust system.



Plan Showing Reversible Fan

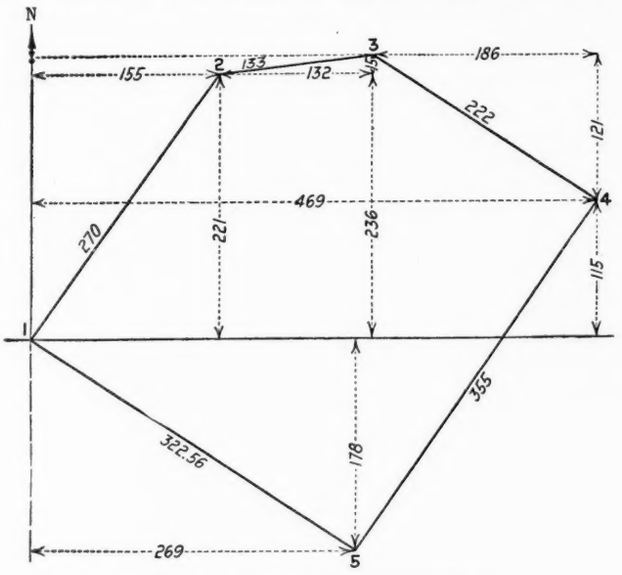
The advantage of a reversible fan is that the direction of the air current circulating through the mine can be changed at the surface when occasion may require. The air current in the mine should be reversed only when the conditions in the workings are thoroughly understood and there is reason to believe that lives may be saved or advantage gained by so doing. In the normal working of the mine the fan should never be reversed without first notifying and withdrawing the men.

The accompanying plan shows the arrangement of a fan drift that will enable the air to be reversed. The position of the doors *AA* and *BB* permits the air coming from the mine through the fan drift to pass to each side of the ventilator and enter the center opening of the fan, as indicated by the arrows. The dotted lines show the position of these doors when the fan is blowing air into the mine. The discharge opening of the fan is then connected with the fan drift. In this position of the doors the outside air enters on each side of the fan, and after passing through the ventilator is discharged into the fan drift and passes into the mine, as indicated by the dotted arrows.

Ques.—Plat the following traversed notes of a survey to the scale of 100 ft. to the inch.

Sta.	Dis.	Latitude	Departure	Total Latitude	Total Departure
1-2	270	221	155	221	155
2-3	133	15	132	236	283
3-4	222	121	186	115	469
4-5	355	293	200	178	269
5-1	322.56	178	269	0	0

Ans.—The accompanying figure shows the above notes of survey platted to a scale of 150 ft. to the inch instead of 100, to bring it within the column. Drawn to a scale of 100 ft. per in. the plat would be half again as large. In this question the south latitudes and the west departures should have been written —121, —293, and —200, —260. Likewise, for the total latitude, —178; but the total departures are all positive, being east departures.



Survey Platted by Departures

Ques.—State the advantages and disadvantages of large slow-running fans as compared with small high-speed fans in the ventilation of a mine.

Ans.—Large slow-running fans have the advantage of possessing a greater margin for increasing the circulation of air in mines. In other words, the range of capacity is larger than that of high-speed fans of smaller size. Large, slow-running fans require somewhat heavier foundations and cost more to install and operate. On the other hand, small high-speed fans have limited capacities or a less range in both gage and quantity and to that extent are less reliable for mine ventilation.

Coal and Coke News

Washington, D. C.

Reports of commercial conditions received in Washington from various sources are to the effect that the mining business in its different phases is showing some improvement. As yet there is, however, depression in coal in some places, though in others there is distinct evidence of revival. A report from Philadelphia to the Federal Reserve Board published in the current number of the "Bulletin" issued by that body states that "the anthracite coal business has improved."

On the other hand, the same authority reports from Cleveland that "the coal trade is still unsatisfactory, due to labor, legislative and trade conditons. Much Lake coal was carried over through the winter on the docks, and shipping will begin much later this year." From other soft-coal districts similar reports are received by various inquiriers here, and there is a general feeling that some time will be necessary to restore the business situation to normal so far as respects coal.

The Trade Commission Is Consulted

The first definite communication of an official nature between coal operators and the Trade Commission, which body is now in working order, occurred recently, when operators from Franklin County, Ill., appeared before the commission to state their views regarding certain trade practices and to get the ideas of the Commission on the subject if possible. They told the commission that they merely wanted to obtain official sanction for what they had heretofore done, and that if their acts of coöperation were approved, there would be no attempt to make agreements to control prices. The sole object would be to keep down the cost of production.

Furthermore, they desired permission to compare notes with one another over market conditions. For instance, it was noted, a prospective purchaser may tell one operator that another operator offered to sell coal 10c. cheaper and thereby argue the price down, whereas, as a matter of fact, the prospective purchaser may be falsifying about the prices quoted by other operators. The operators desire to have a system of coöperation so that they can compare notes. They would also like to compare ideas and methods of mining so that they could be able to produce the coal at the lowest possible cost.

HARRISBURG, PENN.

The Governor has succeeded in putting through one of his "pet measures," the child labor law, and it is now in his hands for signature.

Employed children who will not have reached the age of 16 by Jan. 1, 1916, will probably lose their employment, and their homes this source of income likewise. It is estimated that several thousand boys employed about coal mines of the state will be thrown out of employment by the operation of the law. Coal company managers and superintendents employing boys between 14 and 16 years of age are almost unanimous in their disapproval of this statute.

The new law gives the employer the choice of employing children between the ages of 14 and 16 for 42 hours a week and overseeing their attendance at school for a least 8 of the remaining hours, or not employing children below 16 years of age at all. It is declared by managers and superintendents of both coal and industrial operations that to arrange a working schedule to suit the needs of the law for children under 16 would be far more tedious and complicated than is practical for them to attempt and they will therefore dispense with the employment of these children.

The law is already having an effect, for in a number of places the children who will not have attained the age of 16 by January, 1916, are now being weeded out, none others being employed who will not comply with the law when it is in force.

One of the large anthracite companies estimates that it will discharge between 300 and 400 children at once.

Senator Crow has introduced a bill to amend section 4 of article 19 of the act of 1911, providing that bituminous mine inspectors who have served for 8 years and have passed two examinations shall be exempt from any further examination and providing for their suspension and removal. The amended section reads as follows:

The principal examination shall be in writing and each applicant shall also undergo an oral examination pertaining to explosive gas, safety lamps, methods of ventilation and mine management. The questions and answers thereto in the oral examination shall be reported verbatim by an expert stenographer and typewritten fully to assist the Board in the work of rating the qualifications of the candidates: Provided, That any person who has served as a mine inspector continuously for 8 years and has passed two consecutive examinations for the office of mine inspector shall be exempt from taking any further examination and shall continue in said office without any further examination unless removed or suspended as provided by Article 21 of the Act of June 9, 1911, P. L. 756, section 4, of the act of Apr. 14, 1903, P. L. 180. Any candidate who shall make a general average of at least 90 per centum shall be deemed successful. The manuscripts and other papers of all applicants in the principal examination together with the tally sheets and the correct solution of each question as prepared by the Examining Board, and also the stenographer's report of the oral examination shall be filed in the Department of Mines. The Examining Board or at least four members thereof shall certify to the Governor and also to the Department of Mines the names and percentages of all successful candidates who are properly qualified under the provisions of this article to fill the office of Inspector. A certificate of qualification prepared by the Chief of the Department of Mines shall be issued to each successful candidate.

The Examining Board shall as soon as practicable after the examination furnish to each applicant on printed slips of paper a copy of all questions (oral and written) given at the examination marked "solved right" "imperfect" or "wrong, as the case may be."

Bill to Bring Bituminous Miners Under Compensation Act

The bill prepared by the attorney general and introduced by Senator Miller, to bring the bituminous miners under the workmen's compensation act, has been amended by the committee on Mines and Mining, and section 1 of the proposed act now reads:

In order to secure efficient management and proper ventilation of the mines, to promote the health and safety of the persons employed therein and to protect and preserve the property connected therewith the operator or the superintendent shall employ a competent and practical mine foreman for every mine where 10 or more persons are employed, who shall be under the supervision and control of the operator. The mine foreman shall have full charge of all the inside workings and the persons employed therein subject, however, to the supervision and control of the operator in order that all the provisions of this act so far as they relate to his duties shall be complied with and the regulations prescribed for each class of workmen under his charge carried out in the strictest manner possible. If the mine is generating explosive gas in quantities sufficient to be detected by an approved safety lamp, the mine foreman must possess a first grade mine foreman's certificate, or be a person who in the judgment of the operator is a person equally competent with the holders of such certificate. If the mine is non-gaseous the mine foreman must possess either a first grade mine foreman's certificate or a second grade mine foreman's certificate, or be a person who in the judgment of the operator is equally competent with the holders of such certificates.

When the mine workings become so extensive that the mine foreman is unable personally to carry out the requirements of this act pertaining to his duties, he shall have the right to employ a sufficient number of competent persons to act as his assistants who shall be under his instructions and the operator's instructions in carrying out the provisions of this act. If the mine is generating explosive gas in quantities sufficient to be detected by an approved safety lamp the mine foreman's assistants must possess first grade assistant mine foremen's certificates or be a person who in the judgment of the operator is equally competent with the holders of such certificates.

In case of the necessary temporary absence of the mine foreman, he may deputize his work for the time being to his assistant, who shall perform all the duties of the mine foreman. And the right to hire and discharge employees, the management of the mine and the direction of the working forces are vested exclusively in the operator and no person or persons, association or associations, organization or organizations, corporation or corporations, shall interfere with or attempt to interfere with, abridge or attempt to abridge in any manner whatsoever such right: Providing, that this act shall not invalidate any existing contract.

Chairman Hess, of the House Committee on Mines and Mining attempted to have the Catlin bill recommitted to his committee for the purpose of amendment, stating that a similar bill affecting the bituminous miners had been passed by the Senate, and suggested that both be incorporated into one measure, which would then bring the wording of the third paragraph of section one of the bituminous measure in force in the anthracite region, but the House was against recommitment.

The Supreme Court Is Appealed to

The Alden Coal Co.'s appeal from the decision of the Dauphin County Court, which has held to be constitutional the anthracite tax law, which requires mining companies to pay to the state 2½ per cent. ad valorem on all coal shipped

to market (with the exception of washery coal) was filed with the Supreme Court on May 5.

The coal companies affected by this act are attacking it, on the contention that it is class legislation. Much interest is being manifested in the case in view of the fact that taxes already levied total no less than $5,000,000.

The Alden Coal Co.'s stand is identical with that of the 100 or more coal companies which have appealed from paying the state tax. The appeal is based on the ground that bituminous coal is not taxed; that all localities are not benefited alike by the distribution of the tax funds, that the company is not liable to tax on coal shipped outside of the Commonwealth and that the company is already paying state and local taxes.

Neither the state nor the coal companies are optimistic about quick settlement. So much importance is attached to the court's decision and there are so many authorities cited in defense of the stands taken by the corporations and the state that it is considered almost impossible to have all the appeals ready for the Supreme Court which convenes at the Capitol on May 24.

Voluminous records are now being prepared by the coal companies, and it is doubtful if these will be prepared by the 24th, which means that the appeals would have to be heard when the Supreme Court convenes during the first week in October.

Prospects of a long session of the Legislature are also an obstacle in the path of the appeals, since the business of the lawmakers would force the printers to delay work on the records in the tax case.

PENNSYLVANIA

Anthracite

Georgetown—The engine house at the Katydid colliery of the Red Ash Coal Co. was destroyed on May 6 by fire of unascertained origin and several hundred men and boys will be thrown out of work until a new engine house can be erected. For a time the flames threatened to set fire to the breaker and machine-carpenter shops. The destruction of the machinery in the engine house will cause the shut down of Nos. 1 and 2 collieries of the company.

Springfield—The Court of Northumberland County on May 3 dismissed a preliminary injunction which restrained the Coal Township School Board from collecting $70,000 taxes for 1913 from the Philadelphia & Reading Coal & Iron Co., the Lehigh Valley Coal Co. and the Mineral R.R. & Mining Co.

Plymouth—Several "button strikes" are on in the anthracite region and several thousand men are affected. At Plymouth about 1500 men and boys at the Buttonwood and Parrish collieries went on strike because a few men refused to pay back dues and attain good standing with the United Mine Workers of America. At Shamokin 1000 or more went on strike on May 6 at the Scott colliery of the Susquehanna Coal Co., because some of the men are not members of the organization. Several hundred men went out at Oakhill colliery at Minersville, until wages are raised to what they claim is a scale equal to that of other collieries. The men also allege that they are being overcharged for powder furnished. Four thousand employees of the Packer collieries Nos. 2, 3 and 4 of the Lehigh Valley Coal Co., struck recently because 12 carpenters reported for work without union buttons. It is feared the strike will extend to other operations.

Wilkes-Barre—More than 1200 men were present on May 5, at the 8th annual dinner of the Wilkes-Barre District Mining Institute, in Irem Temple. It was an impressive gathering of laboring men, all engaged in the same occupation. The guest list included the names of general managers, superintendents, foremen, miners, and laborers of all classes. The dinner, an excellent but simple meal, was served by the Y. M. C. A., with a corps of volunteer waiters from the various coal offices throughout the valley. One of the features of the evening was the graduation of three students of the mining school who had completed the three year course. These are Edmund P. Thomas, of the Kingston Coal Co., Sidney Davis, of the Lehigh & Wilkes-Barre Coal Co., and Fred G. Williams, of the Delaware, Lackawanna & Western R.R. Co. coal department. The diplomas were presented by president Thomas H. Williams, who also refunded to them the tuition fees which they had paid into the school during their course, as one of the rewards of their perseverance and ambition.

Scranton—Miners working in the drift of the Diamond mine recently threatened to go on strike unless the company furnished better ventilation. It was claimed by the men that several laborers were overcome by the bad air. It is believed that the matter will be amicably settled.

Pittston—More than 650 men attended the 8th annual banquet of the Pittston Mining Institute, oldest in the anthracite region, at the Pittston Armory on May 8. Captain W. A. May, president of the Pennsylvania Coal Co., was among the speakers. In his address, Attorney Evan C. Jones, of Wilkes Barre, referred to the institute as the exemplification of altruism. The institute has a membership of 700 and holds monthly meetings in the Pittston Y. M. C. A.

Bituminous

Somerset—In spite of the depressed condition of the coal market the mines of Somerset County are as active as at any time last year. The plants at Hooversville, Ralphton, Jenner and Jerome are working full time, the last named loading 95 steel railroad cars every day. The average number of cars of coal handled daily in the local yards of the Baltimore & Ohio R.R. is 450, which is about all the yard superintendent can take care of with present facilities.

Pittsburgh—Judge John D. Shafer in an opinion on May 5, dismissed the petition of John H. Jones, one of the receivers of the Pittsburgh-Buffalo Coal Co., in which he asked the court to require George H. Calvert, master appointed by the court to sell the coal properties, to cease advertising the mines for sale, pending the decision of the Supreme Court in an appeal taken by Mr. Jones from the decree of the lower court ordering the sale. The property is being advertised for sale on May 27, it was stated to the court at an argument, so that the sale would not be made before the decision of the appeal to the higher court. The court states that it does not see how the advertisement hurts the Pittsburgh-Buffalo Co.

Connellsville—Evidences of returning prosperity are to be found on the railroads of the Connellsville coke region, particularly the Pittsburgh & Lake Erie and its allied system, the Western Maryland. It is said that both the Pittsburgh & Lake Erie and the Western Maryland are giving their trainmen such steady work that fast freight trains have been held up until the crews completed their 8-hr. rest period The Western Maryland within the next few weeks will begin hauling coal out of the Fairmont region by way of Connellsville, using the Baltimore & Ohio tracks to this point.

Uniontown—Orders have been issued by the W. J. Rainey Co. for the resumption in full of all ovens at the Allison plant of the company. There are 400 ovens at this plant, 350 of which have been in steady operation. The firing of the 50 additional ovens will provide employment for a number of heretofore idle men at this plant.

Republic—Six first-aid teams composed of the employees of the Tower Hill Coke Co., have begun a course of instruction in first-aid and mine-rescue work that, when completed, will enable the members to take examinations for American Red Cross diplomas. The teams will meet weekly for two hours for instruction from D. B. and H. O. Millward, who not only hold the Red Cross diplomas but also those from the American Mine Safety Association. Dr. W. S. Kimmell is a member of the executive committee and assists with the work. The course will continue for three months at the end of which time the Red Cross will appoint examiners to conduct an examination for certificates.

WEST VIRGINIA

Charleston—Several of the larger coal operations in Raleigh County that have been carrying the accounts of their employees during the slack season in order to hold them together in anticipation of the resumption of active operation have notified these employees that the rent for the houses occupied by them during the past six months of virtual idleness will be remitted and that the terms of leasing for the purpose of collections of rentals will date from the resumption of work by their occupants.

Fairmont—Fifteen hundred miners are wanted by the Consolidation Coal Co. to man seven mines that will be put in commission shortly. Mines now in commission are being operated to their limit. The mines to be opened are: Beechwood No. 30; Murray No. 45; Montana No. 24; Shaft Mine No. 38; Meadow Brook No. 55; Coal Station No. 62, and Two Licks No. 39. These operations will run with a full compliment of men six days a week as long as the car supply holds out.

Huntington—The West Virginia Coal Operators Association opened temporary headquarters in the Robson-Prichard Bldg., recently. A. H. Land, secretary of the organization, has charge of the office. A meeting of the executive committee of this organization will be held in Huntington May 14, when plans relative to a campaign of education to familiarize producers and consumers with scientific coal costs will be discussed. This association has no political object, as has been rumored in the past.

ALABAMA

Birmingham—The Sloss-Sheffield Co. will resume operations at the Bessie mines, at the furnace at Florence, and the coke ovens at Blossburg and Brookside, about May 15. One thousand men will be employed. These plants have been closed down for six months.

TENNESSEE

Nashville—Two measures which have been recommended by the Democratic steering committee for passage by the Legislature, are the semi-monthly pay day bill and a bill to create a state mining department. Another measure which is also recommended provides for re-organization of the state geological department. The Workmen's Compensation measure has not been treated, the committee waiting for further reports from sub-committees.

The State Mining Department has announced that certificates have been issued to those who have satisfactorily stood examination for foremen of mines in Tennessee as follows: John Pass, of Cardiff; J. A. Tidewell, of Emery Gap; I. S. Montgomery, of Cardiff; A. C. Montgomery, Harriman; S. J. Ingram, A. M. Derrick, L. Carroll, C. Bolin and S. S. Bledo, of Rockwood.

KENTUCKY

Harlan—It is reported that the Stonega Coal & Coke Co. is planning to build a road across the mountain from Keokee to its mines at the head of Clover Fork in Harlan County. W. J. Gennery, store manager for the company, recently made the trip from the Virginia town to the head of Clover Fork by automobile, being the first to reach that point by this means.

Ashland—A meeting of the directors and others who recently organized the Kentucky River Coal Corporation will be held here on May 19 at which time various details of the merger will be taken up and worked out.

Middlesboro—The clean-up and paint-up campaign which has been engineered by the health authorities and mine operators is having a general effect. The miners are brightening up their homes and one Middlesboro dealer in the last two weeks reports the sale of wall paper for more than 200 miner's houses.

Whitesburg—There is continued improvement in activities in coal mining throughout eastern Kentucky, especially in the Elkhorn and Boone's Fork fields. Both the Consolidation Coal Co. and the Elk Horn Mining Corporation in the Jenkins-McRoberts-Fleming field have large orders sufficient to keep all their mines running full time. Hundreds of new miners are being added daily to the work. Railroads entering the territory are taxed to handle the output. Continued increases, however, will be made as the work advances.

Praise—The Eastern Kentucky Block Coal Co. is beginning a coal development a few miles from here on the Carolina, Clinchfield & Ohio R.R. A mining town has been started and the opening of mines is giving employment to several hundred men.

OHIO

Columbus—The Sunday Creek Coal Co. of Columbus has taken over the sales end of the San Toy mines, of the Jones and Adams Coal Co. at San Toy Ohio. The mines are now known as Sunday Creek mines Nos. 401 and 402.

C. E. Haskins, receiver for the Starr-Hocking Coal Co., which has mines in Athens County, received a bid of $5000 for the property when offered for sale at public auction for the second time at the court house, Columbus. J. G. Westwater submitted the bid for unnamed parties. The court will be asked to approve the bid.

Teegarden—The announcement is made by the West Pittsburgh Coal Co. that its mines near Teegarden, Ohio, will be opened soon. The mines have been idle for almost a year. Extensive improvements have been made on the tipple.

INDIANA

Indianapolis—The Supreme Court of the United States has declared constitutional the Indiana law requiring coal mine owners to provide wash houses for their employees. The operators attacked this law as being class legislation and on the ground that it permitted minority rule, as it provided that a wash house must be furnished if only 20 miners petition for it.

Linton—The Lattas Creek mine which has been idle for six months has begun working again.

Clinton—In accordance with the decision of the Supreme Court upholding the validity of the Indiana miners' wash house law, miners in this district will promptly prepare petitions, asking that such houses be supplied. The Bunsen Coal Co. already has wash houses with shower baths and clothes lockers.

ILLINOIS

Maryville—The casting holding the drum for the hoisting table at the Donk Mine here broke recently while hoisting. The cage fell back, and before the engineer could bring the engine to a stop considerable damage was done to the tipple and other top works. Four hundred miners have been thrown out of work until repairs can be made.

Carterville—The Carterville Coal Co., the oldest operating coal company in the Williamson County field, with offices in St. Louis, has gone into the hands of a receiver. The general business depression, with a narrowing market and slow collections, were assigned as the cause.

PERSONALS

W. Roland Cox, consulting mining engineer, of New York, has removed his offices from the City Investing Building to the Equitable Building, at 120 Broadway.

W. A. Lafont, secretary of the Rutledge & Taylor Coal Co., of St. Louis, Mo., has severed his relations with that firm after a continuous period of 16 years with it.

J. H. Lane, for the past 10 years in charge of Oliver No. 3 plant of the Oliver & Snyder Coal & Iron Co., has been promoted to the position of general superintendent of the three Oliver coke plants and also of the Southwest Water Co., succeeding the late Fred C. Keighley.

A. H. Wood, of Petros, Tenn., president of the Petros Coal Co., and who has for some time past been consulting engineer for the Turley Coal Co., whose headquarters are at Atlanta, Ga., with a mine at Turley, Tenn., has severed his connection with the last named company in order to be able to devote more of his time to the Harlan Coal & Coke Co., which he has just recently organized to develop a coal lease he has in the Harlan, Ky., field.

J. H. Healy has resigned his position as vice-president of the Black Hawk Coal Co., the Consolidated Fuel Co., the Castle Valley Coal Co., and the Panther Coal Co., which he filled for 18 years, this resignation to be effective July 1. Mr. Healy will take a two months' vacation, the first he has taken in 20 years. E. L. Carpenter, president of the above named companies, will in future perform the duties formerly assigned to the operating vice-president, and as soon an injunction proceedings are settled the four companies will be consolidated into the United States Fuel Co. Robert M. Morgan has been appointed general superintendent. He was formerly superintendent of the Utah Fuel Co. at Castle Gate, Utah.

OBITUARY

Dr. C. Clifton Ferrell, president of the Export Pratt Coal Co., was shot and killed by two burglars at Praco, 39 miles from Birmingham, Ala., recently. The burglars attempted to break into the commissary adjoining his home. Dr. Ferrell was 50 years of age and was a well-known educator, author and student. His remains were taken to Hopkinsville, Ky., for interment.

Alexander Thompson, of Pittston, Penn., mine foreman for the Pennsylvania Coal Co. since 1876, died on May 6 in St. Francis' Hospital, San Francisco, Calif. He was stricken with pneumonia while on a pleasure trip to the western coast on his first vacation in 50 years. He was born in Scotland, learned mining in his native land and came to the anthracite region in 1866. He was a rock and shaft-sinking contractor before becoming a mine foreman. Mr. Thompson had been a city councilman and was at the time of his death president of the Pittston City Planning Commission. His son, Dr. James R. Thompson, is bringing the body home.

Col. Lloyd Burrel Huff, aged 43, died at his home "Rose Fountain Park" at Greensburg, Penn., on May 5. Death was due to Bright's disease, from which he had been suffering for more than a year. Colonel Huff was widely known and was interested in large coal holdings in Westmoreland, Cambria and Indiana Counties in Pennsylvania and in West Virginia.

Col. Huff was born in Greenburg, Dec. 8, 1871. He was the son of the late Congressman G. E. Huff and Mrs. Henrietta C. Huff. He received his preliminary education in the public schools at Greensburg and was graduated from the Rennselaer Polytechnic Institute at Troy, N. Y. Upon his graduation from this institute he engaged in the coal business with his father and became a factor in many coal companies in Westmoreland, Cambria and Indiana counties.

He was president of the Keystone Coal & Coke Co., the Pittsburgh, McKeesport & Greensburg Ry. Co., the Westmoreland Hospital, the Allegheny Co., a coal company of Washington, D. C., and the United Brick Co. He was also a director in the Acme Gas Coal Co., the First National Bank of Greensburg, the Keystone Clay Products Co., and the Latrobe-Connellsville Coal & Coke Co.

Col. Huff was married about 9 years ago to Eleanora Moorehead, of Pittsburgh. He was a member of the staff of Governor Hastings and in this manner acquired the title of colonel. He is survived by his widow, two daughters, and his mother.

TRADE CATALOGS

The Deming Co., Salem, Ohio. Catalog J. "Power Pumps." Illustrated, 190 pp., 7x9 in.

E. Keeler Co., Williamsport, Penn. "Return Tubular Boilers." Forty-five pp., 7½x10½, illustrated.

The Kerr Turbine Co., Wellsville, N. Y. "Economy Turbo-Pumps." Twenty-two pp., 6x9 in., illustrated.

The C. D. Pruden Co., Baltimore, Md. Loose Leaf Catalog. "Portable Steel Buildings." Illustrated, 8x11 in.

The Kerr Turbine Co., Wellsville, N. Y. "Economy Exhaust Steam Turbines." Fourteen pp., 6x9 in., illustrated.

The Jeffrey Mfg. Co., Columbus, Ohio. Bulletin No. 141. "Single Roll Coal Crusher." Illustrated, 32 pp., 6x9 in.

The Dover Boiler Wks., 50 Church St., New York. "Dover Rustproof Enameled Tanks." Fourteen pp., 6x9 in., illustrated.

The Weber Subterranean Pump Co., 90 West St., New York. "The Weber Subterranean Pump." Twelve pp., 8½x11 in., illustrated.

The North Western Expanded Metal Co., Chicago, Ill. "Kno-Burn Expanded Metal Lath." Fifty-two pp., 6x9 in., illustrated.

The Brown Hoisting Machinery Co., Cleveland, Ohio. Catalog U. "Brownhoist Transfer Cars and Larries." Illustrated, 32 pp., 6x9 in.

The North Western Expanded Metal Co., Chicago, Ill. "Designing Data for Reinforced Concrete." Eighty-seven pp., 4x6½ in., illustrated.

Myers-Whaley Co., Knoxville, Tenn. Catalog No. 5. "Shoveling Machines for Underground and Surface Work." Illustrated, 28 pp., 8½x10 in.

The Ohio Brass Co., Mansfield, Ohio. O. B. Bulletin. "Electric Railway, Mine Haulage, and Power Transmission," Twenty-four pp., 6x9 in., illustrated.

PUBLICATIONS RECEIVED

Department of the Interior, U. S. Geological Survey. "The Production of Sand-Lime Brick in 1914," by Jefferson Middleton. Seven pp., 6x9 in., unillustrated.

Department of the Interior, Bureau of Mines. Technical paper 81. "The Vapor Pressure of Arsenic Trioxide," by H. D. Welch and L. H. Duschak. Twenty-one pp., 6x9 in., illustrated.

Department of the Interior, U. S. Geological Survey. Bulletin 596. "Geology and Coal Resources of North Park, Colo.," by A. L. Beekly. One hundred and twenty-one pp., 6x9 in., illustrated.

Department of the Interior, Bureau of Mines. Bulletin 81. "The Smelting of Copper Ores in the Electric Furnace," by Dorcey A. Lyon and Robt. M. Keeney. Seventy-seven pp., 6x9 in., illustrated.

Department of the Interior, U. S. Geological Survey. Bulletin 567. "Results of Spirit Leveling in Idaho; 1896 to 1914 inclusive," by R. B. Marshall. One hundred and thirty pp., 6x9 in., unillustrated.

Department of the Interior, U. S. Geological Survey. Bulletin 582. "Mineral Deposits of the Santa Rita and Patagonia Mountains, Ariz.," by Frank G. Schrader. Three hundred and seventy-three pp., 6x9 in., illustrated.

Department of the Interior, U. S. Geological Survey. Bulletin 580. "Contributions to Economic Geology. Part 1. Metals and Non-Metals Except Fuel," by F. L. Ransome and Hoyt S. Gale. Four hundred and sixty-two pp., 6x9 in., illustrated.

INDUSTRIAL NEWS

Pittsburgh, Penn.—The J. A. Brennan Drilling Co. has changed its name to the Pennsylvania Drilling Co. It has also moved its Scranton office to 2623 Whitehall Bldg., New York. The firm will continue business under the same management and officers as heretofore.

Birmingham, Ala.—A substantial increase in the coal trade, and a prevailing tone of optimism among operators are felt throughout the Birmingham district. It is believed that within a short time the improvement in conditions will warrant a 100 per cent. operation in some of the mines.

Fairmont, W. Va.—A gain of nearly 200,000 tons was made in the Chesapeake & Ohio coal shipments for the month of April over the previous month. The total shipments in the four districts amounted to 1,796,990 tons, gains being recorded in every district. Kanawha district shipped 523,100 tons; New River 508,555; and Guyan district shipped 486,495 tons.

Columbus, Ohio—The lately organized Jackson-Hocking Coal Co. has opened headquarters on the fourth floor of the Columbia Building. George M. Silcott, who has heretofore made his headquarters at Nelsonville, will be in charge as vice-president and general manager. The company owns three mines which were bought at receiver's sale of the Maple-Gallia Coal Co. These have a combined capacity of 700 tons per day.

St. Louis, Mo.—At the recent annual meeting of the Western Coal & Mining Co. and the Consolidated Coal Co., Kingdon Gould, of New York, was succeeded as president by W. J. Jenkins, of St. Louis, who has been vice-president and general manager. These two companies which have mines scattered throughout several states on the so called Gould railroads are two of the largest in the Middle West. The new president, Mr. Jenkins, has been associated with the Gould properties for many years and no radical changes are likely.

Pittston, Penn.—Work on the new Ewen breaker of the Pennsylvania Coal Co. is progressing in good shape. Last December the breaker burned down, a lot of stick timber being left that was not consumed. Considering the time taken to clear away the débris and get down to real building, the work shows that no time is being lost in replacing the structure. The mines thrown idle were Nos. 7 and 4 shafts and the Hoyt, but the coal from the latter was sent to the No. 14 breaker, so there was no general suspension at that particular colliery.

Harrisburg, Penn.—An order was issued on May 8, by the Public Service Commission directing that the Pennsylvania, Lehigh Valley and the Lehigh & New England R.R. companies establish a through route for the transportation of coke and coal from the producing regions in Pennsylvania to the plants of the Lehigh Fire Brick Works, the Bryden Horseshoe Co. and the Crane Iron Works, located in Catasauqua. The Commission also ordered the companies to establish joint rates, as follows: Upon coke, from Galilitzin, $1.65, a ton; from Latrobe, $1.85, and from Connellsville, $2.05. Upon coal from Clearfield and Latrobe, rate group, $1.75; from Greensburg, rate group, $1.85, and from Westmoreland, rate group, $2.05. The rate and routes are to become effective on or before May 17. It was the contention of the complainants that they were required to pay unreasonable rates and were unable to compete with other industries.

Harrisburg, Penn.—Shipments of anthracite coal in April were the largest ever reported for that month. The total volume of coal moved was 6,486,201 tons, compared with 6,072,164 tons last year, an increase of 414,037 tons. With April's large tonnage the total anthracite movement for the first four months of this year is almost equal to that of last year. In the four months ended Apr. 30, a total of 20,481,241 tons was moved, compared with 20,534,050 tons last year, a decrease of only 52,809. The Lehigh Valley R.R.'s tonnage in April was unusually large and all companies reported increased shipments except the Philadelphia & Reading R.R. The Lehigh Valley also leads in the amount of coal moved in the first four months, its tonnage being nearly 500,000 tons ahead of the Reading, which shows a decrease of 900,000 tons from last year. The Delaware & Hudson and the Lackawanna companies show a larger tonnage for the first third of the year. The Pennsylvania R.R. reported a loss of 151,575 tons. Following are the individual tonnages for April, Philadelphia & Reading, 1,181,959; Lehigh Valley, 1,303,119; Central R.R. of N. J., 770,356; D. L. & W. R.R. Co., 977,948; Delaware & Hudson, 642,913; Pennsylvania, 647,395; Erie, 737,548; Ontario & Western, 215,963; totals, 6,486,201.

Coal Trade Reviews

General Review

April anthracite makes a new record, but the trade is slowing up notably. Heavy loading in foreign trade the feature of the bituminous market. Internal consumption continues low. Light movement in Lake trade.

The official figures of the anthracite shipments for April more than sustained the predictions of a heavy production, the movement having established a new high record for that month. In addition to this the official figures also show a substantial decline in stocks at Tidewater, but in spite of this apparently encouraging technical position of the market, the trade is showing a general slowing up in all directions. There is a decided paucity of orders among some shippers, while concessions of 5c. and 10c. are necessary to move coal, and a general curtailment is anticipated in the immediate future. The market is particularly weak on the steam sizes, and large concessions are being reported on pea coal. In addition to this the Western movement is not particularly large.

Loading on foreign accounts from Atlantic Range ports continues extraordinarily heavy, the announcement by the British Government of a conditional embargo against exports having resulted in another spurt in this business. This offshore movement is now attaining to such proportions that it will soon be a potent factor in the general market situation, and will undoubtedly do much to relieve the heavy pressure under which the bituminous market has been laboring for so long.

The slightly firmer tone of the past week or two has been well maintained, but the closing up of the large navy contract, involving nearly a million tons of Pocahontas coal, on the basis of $2.73 is significant evidence of the underlying weakness. The market is being maintained only by the most rigid restriction in production, and the movement is confined almost entirely to contracts, the consumption on which is at a minimum.

Unless there are some most unexpected developments in the Lake trade late in the season, the movement in this direction will be even more disappointing than last year. The large consumers in the Pittsburgh district are not increasing orders, although there are conservative observers who believe that consumption is slightly larger, and that stocks are being drawn on for the extra tonnage. Competition from outside districts continues so aggressive that prices are under constant pressure, and shippers find very little encouraging in the situation.

There is so little business to be had in the Middle Western market that the agencies do not consider it worth while to reduce prices to obtain it, with a result that quotations are relatively well maintained, though at a low level. It is developing that a great many contracts have been closed at close to the cost of production. Rumors of a big consolidation of a number of the large Middle Western interests is a feature of the week's developments. The screenings market continues so strong that operators will soon be forced to crush other grades to meet the demand on this size.

BUSINESS OPINIONS

War scares cause a note of hesitancy. Basic conditions still considered highly favorable. "Engineering News" reports a significant increase in building operations.

Financial Chronicle—Owing to the dislocation of trade occasioned by the war, abnormal conditions prevail practically everywhere, and it behooves our people to proceed cautiously until the outlook becomes clearer and the possibility of sudden and strange surprises no longer exists. Even the United States Treasury cannot claim exemption. It is distinctly weaker than it would be if its income had not been so seriously impaired by the war. The truth is, under the continued falling off in revenues, with the coincident increase in the expenditures, the Treasury situation has now reached a point where we should imagine it must at times be causing much anxiety.

Bradstreet's—Undercurrents run in a favorable direction though trends in certain lines and some sections, affected either by weather conditions or marked dependence on a particular commodity, still lag. But by and large, the outstanding factors indicate that industry has made further progress; steel mills are operating at close to 75 per cent. of capacity; buying of pig iron, helped by speculative purchases, has spread; plants making war supplies are pushed to the utmost; additional export orders of magnitude are pending and unemployment is decreasing.

Dun's—Business conditions show comparatively little change, and though the recent cheerful outlook is maintained, convervatism goes hand in hand with increased confidence.

Engineering News—Contemplated building operations in 23 cities in the Eastern States from plans filed in April show a gain of $4,000,000 or 16% compared with the same month last year. This gain is progressive for in March it was only slightly over $1,000,000, in February $3,000,000 and in January about the same. It is the largest gain recorded for more than a year. For the first four months the gain in these cities aggregated $9,000,000 or 11%. A falling off of $1,000,000 recorded in 25 Central cities, compares with one of more than $3,000,000 last month and nearly as much in each of the two previous ones. The loss of $1,300,000 in 14 Southern cities compares with one of over $2,500,000 in the previous month.

Iron and Steel—A falling off in the unfilled tonnage of the United States Steel Corporation of less than 100,000 was not unexpected for the output of steel products in April was substantially larger than in March. The steel manufacturers, those doing purely an ordinary business, are running to about 75% of capacity. One of the favorable developments has been the placing of several orders for steamships; contracts for at least four boats have been signed within the last ten days. Buying of pig iron has broadened out following large purchases of Southern foundry by speculative interests. Railroad purchases are small but the earnings of carriers have so improved that larger buying may soon take place.

American Wool and Cotton Reporter—Foreign wools, Australian and Capes, were the only feature of the Boston wool market this week. Total sales for the week ran about 1,750,000 lb., 75% of these being Australians and Capes. There is a distinct feeling in the market that fine wools will continue for a long time to be valuable property. Coarse wools, which have been most desirable for army cloth purposes, have remained high because of the war. Wools around the world are 50% higher than the average price.

The Southern Lumberman—Reports from leading hardwood markets for this week are more encouraging than for some time past. Development is spring business has been slow but steady, and now has assumed a volume which is gratifying.

Boston News Bureau—Of course the present situation depends entirely on foreign developments. There are numerous favorable features that are presenting themselves, such as the splendid outlook for wheat, our remarkable foreign commerce, the improvement in railroad earnings, the reduced surplus of idle cars, our strong financial position and the averting of war between Japan and China. These, however, are so overshadowed by foreign complications that they cease to carry the weight warranted.

ATLANTIC SEABOARD

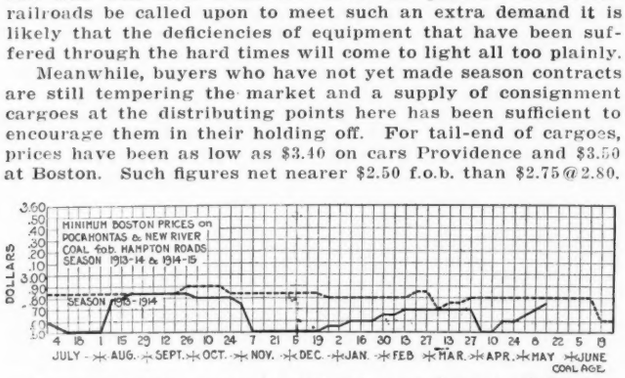
BOSTON

Pocahontas and New River market continues on a better price basis. No gain in demand, however. Export market closely followed, but buyers still holding back. Georges Creek demand off-shore keeps up but Pennsylvania grades are dull. Anthracite shippers beginning to get short of orders.

Bituminous—The market on Pocahontas and New River has developed no new features. The slight improvement reported last week in conditions f.o.b. Hampton Roads has been maintained and there is a slightly firmer tone both with respect to future business and current inquiry for export. The recent closing of a Navy Department contract at $2.73 f.o.b. is an instance of this slight improvement. Coastwise there

is practically no demand for spot coal and the agencies are working almost exclusively on contract arrangements. Shipments are coming forward regularly but there is still an entire lack of snap to the trade in this territory. The export market is being followed with much interest here but there is some difference of opinion as to its probable bearing on the trade. The weight of the argument seems to be with those who feel that the foreign demand is bound to broaden and this will have a marked effect on prices. Should the railroads be called upon to meet such an extra demand it is likely that the deficiencies of equipment that have been suffered through the hard times will come to light all too plainly.

Meanwhile, buyers who have not yet made season contracts are still tempering the market and a supply of consignment cargoes at the distributing points here has been sufficient to encourage them in their holding off. For tail-end of cargoes, prices have been as low as $3.40 on cars Providence and $3.50 at Boston. Such figures net nearer $2.50 f.o.b. than $2.75@2.80.


MINIMUM BOSTON PRICES on POCAHONTAS & NEW RIVER COAL, fob. HAMPTON ROADS SEASON 1913-14 & 1914-15
DOLLARS
SEASON 1913-1914
JULY AUG. SEPT. OCT. NOV. DEC. JAN. FEB MAR. APR. MAY JUNE
COAL AGE

Georges Creek output is still being confined to Baltimore loading and will continue to be routed there until the present delay in steamer loading is overcome. The ships of this grade were pioneers in several foreign markets and they are now getting results both from work put in heretofore and from their new financial connections. In this territory there is no change in prices and except in scattered instances no improvement in the demand for this grade.

The Pennsylvania coals share the general dullness. Inquiry is lax and with West Virginia coals so low in price for small lots inland there is very little chance even for Cambrias and Somersets. A fair volume of these coals is coming forward in conjunction with anthracite from Philadelphia but even this business will probably sag off in a few weeks. All-rail the movement is light. Most of the consumers are well behind their usual requirements.

Anthracite—There is already a decided lack of orders among some of the shippers, and concessions of 5@10c. are made in order to move coal. A general curtailment is looked for in the near future. The steam sizes and dock screenings are still in good demand in this market.

Current quotations on bituminous at wholesale are about as follows:

	Clearfields	Cambrias Somersets	Georges Creek	Pocahontas New River
Mines*.....	$0.85@1.40	$1.15@1.60	$1.67@1.77	
Philadelphia*.....	2.10@2.65	2.40@2.85	2.92@3.02	
New York*.....	2.40@2.95	2.70@3.15	3.22@3.32	
Baltimore*.....	.....	.....	2.85@2.95	
Hampton Roads*.	.....	.....	.....	$2.75@2.80
Boston†.....	.....	.....	.....	3.50@3.73
Providence†.....	.....	.....	.....	3.40@3.68

* F.o.b. †On cars.

NEW YORK

Bituminous quiet with shipments heavily restricted. Improved outlook in the export trade. Anthracite slowing down. Heavy April shipments create a surplus. Pea coal a drug on the market.

Bituminous—The soft coal market continues dull with little change from last week. Operators and shippers are full of hope, however, for a reversal of conditions in the near future. The mines are not very active but sufficient coal is being received here to meet all demands. As a result of this conservatism on the part of operators the market is not flooded with demurrage coal. Spot coals are scarce. Operators are realizing there is not much profit in shipping coal to this market when it must be sold at a loss to save demurrage charges. Mine owners as a rule are not shipping any more coal than they have orders to fill. This necessitates a curtailment of production and in the Cambria and Clearfield districts the mines are working on about a two and one-half day schedule. Those in the Somerset district are doing about four days a week while other mines with excellent coals are working from one to one and one-half days a week. On the other hand the mines in the New River district are working about four and one-half days a week and those in the Pocahontas district a trifle better.

The export business is becoming stronger. Inquiries are increasing. Some have come recently from Italy, Egypt, France and quite a number from Argentina. Many of the inquiries have been regarding New River and Pocahontas coals. One report had it that a New York banking house with French connections has been making inquiries regarding the shipment of 250,000 tons of three-quarter gas coal, and the same amount of run-of-mine to be used for the French Government.

In the local harbor the cheapest quotation heard is $2.25. The general quotations on various grades are as follows:

	South Amboy	Port Reading	St. George	Mine Price
Georges Creek	$3.00@3.10	$3.00@3.10	$3.00@3.10	$1.45@1.55
Clearfield, medium	2.65@2.80	2.50@2.65	.....	1.10@1.25
Clearfield, ordinary ...	2.45@2.55	2.40@2.50	.....	1.00@1.10
Broad Top Mountain—				
Cambria County:				
South Forks	2.90@3.05	.....	.....	1.35@1.50
Nanty Glo..	2.75@2.80	.....	.....	1.20@1.25
Barnesboro..	2.65@2.70	.....	.....	1.10@1.15
Somerset County:				
Quemahoning	.....	2.70@2.85	2.70@2.85	1.20@1.30
Medium	2.55@2.70	2.45@2.65	2.45@2.65	1.10@1.15
Latrobe	2.40@2.50	.....	.....	.90@1.00
Greensburg ..	2.60@2.70	.....	.....	.90@1.00
Westmoreland	2.90@3.15	.....	.....	1.15@1.60
W. Va. three-quarter	.....	2.30@2.55	2.30@2.55	.90@1.00
W. Va. mine-run	.....	2.50@2.90	2.50@2.90	.95@1.35
West. Maryland	.....	2.25@2.40	2.25@2.40	.80@ .90

Anthracite—As predicted last week shipments of hard coal during April were greater than during the corresponding month of last year. Not only that, but April shipments were greater than those of any previous year. The shipments for the month were 6,486,201 tons while the best previous record for April shipments was 6,224,396 tons, made in April 1910. At the same time the coal on hand at Tidewater decreased from 873,698 tons on Mar. 31 to 735,567 tons on Apr. 30, a total of 138,131 tons. Notwithstanding these figures, shippers in this market say the anthracite coal business is quiet. Coal is plentiful at the docks. The mines are working full time and the Lake trade is taking its share of the supply. Egg coal is stronger while the greatest pressure has been on nut coal.

The steam coals remain inactive. There is plenty of these grades on the docks with little demand. Good qualities of pea coal have been quoted at from 40 to 50c. off while some of the cheaper grades are being sold at whatever can be obtained for them. There is no market for Nos. 1 and 2 buckwheat while No. 3 is in fair demand.

Quotations run about as follows:

	Lower Ports		Upper Ports	
	Circular	Individual	Circular	Individual
Broken.....	$4.65		$4.70	
Egg.....	4.90	$4.80	4.95	$4.85
Stove.....	4.90	4.80	4.95	4.85
Chestnut	5.15	5.00	5.20	5.05
Pea.....	3.35@3.50	3.10@3.35	3.40@3.55	3.15@3.40
Buckwheat.....	2.50@2.75	2.25@2.50	2.55@2.80	2.30@2.55
Rice.....	2.00@2.25	1.90@2.10	2.05@2.30	2.00@2.25
Barley.....	1.75@2.00	1.60@1.75	1.80@2.05	1.85@2.10

BALTIMORE

The export trade continues the predominating feature. May shipments on foreign account will run close to quarter of million tons. General domestic situation remains dull.

The attention of the coal trade here is riveted on the immense foreign movement. At the present rate of loading it seems assured that 250,000 tons will be dumped into vessels here in May for foreign delivery. Most of this is going to South American account but large quantities are also going to Italy and Egypt. With the British Board of Trade having ruled that no coals shall be exported from the United Kingdom except to the war allies of that country, a large field is opened up to American coals that was previously held exclusively by the Welsh and English. It is generally expected that this will do much to relieve the flat coal situation.

The general situation as regards the local market remains dull. There is a little better feeling and slightly heavier ordering as a general thing, but there is still plenty of room for improvement. Prices are somewhat steadier, especially on the better grade coals.

Less desirable coals are still offering cheap. Maryland and West Virginia low-grade steam coals are to be had at from 80 to 90c. at the mines to the trade. From 90c. to $1 is asked for less desirable Pennsylvania line coals. The gas-coal situation remains weak.

The charters for the past week included the following:

Vessel	Nationality	To	Rate
William Chatham		Tiburon	$6.50
St. Helens		Tiburon	6.50
Alvarado		San Diego	6.98
Biblster	British	Barcelona	
Modiva	Northern	Isabela de Sagua, Cuba	
Ferndene	British	Palermo	
Christoforos	Greek	Mediterranean port	
Ubbergen	Dutch	Havana	
Linda Fell	British	Alexandria, Egypt	
Bertrand	British	River Plate port	0.[illegible]
Heighingham	British	Barcelona	0.[illegible]
Henry Ibsen	Northern	Barcelona	0.[illegible]

Note—Steamers are indicated by **bold face type**, all others being schooners

PHILADELPHIA

Anthracite trade beginning to lag and curtailed operations likely in the near future. Operators handicapped with small sizes. Bituminous shows little disposition to improve.

Anthracite—The past week has shown a marked falling off in the demand, particularly on the small sizes, and as many of the large operators have carried over considerable of these, the lack of storage room is likely to result in a partial suspension of mining. It is also understood that the demand for chestnut has fallen off to such an extent that it will soon be necessary to store this size also. Broken, egg and stove still continue active, with the preference, if anything, on stove. Egg is also in good demand and there is no difficulty experienced in disposing of the production of broken. The price war in certain sections of the city makes the dealers rather uncertain about their position, and causes many of them to hesitate about taking on additional stocks, until something like order is restored. Collections are also reported slow.

Individual operators are taking advantage of the situation to quote coals that are inactive, at prices less than circular, although it is understood that the concessions are not heavy as yet. April prices for May and June delivery are frequently noted. The trade as a whole does not compare favorably with last year. At that time the mines operated full all through the month of May, but the prospects of continuing on this basis during the current month are not reassuring.

Prices at Tidewater rule about as follows:

	Circular	Individuals
Broken	$4.35	$4.25
Egg	4.60	4.60
Stove	4.60	4.60
Chestnut	4.85	4.75@4.80

Bituminous—While there is considerable moving, most of it is being applied on contracts. Tidewater deliveries are prompt, and it is understood there is little or no coal standing for which disposition has not already been made.

HAMPTON ROADS

Export shipments continue heavy. Government colliers loading. Accumulations at Tidewater somewhat in excess of normal.

Dumpings over the Tidewater piers for the week, while not as heavy as anticipated, at the same time have shown up well. This is especially true as regards the export movement which continues heavy. The bulk of the export cargoes have gone to Italy with other shipments to South American, West Indian and other ports. One cargo of 8013 tons was shipped to Soubaja, Java, and about 10,000 to Spain. The shipment to Soubaja is one of the largest that has ever left Hampton Roads for Java.

Coastwise shipments have consisted of New River and Pocahontas mine-run, nut and slack and the high volatile coals but all shipments going foreign have been mine-run exclusively and a greater portion of them were Pocahontas coal.

The circular prices, so far as can be ascertained, are being maintained except where, perhaps, a shipper has coal on demurrage.

The bunker movement for the week has not shown up so well. It is understood that a fleet of these vessels is due for the coming week and with the Government colliers due and other tonnage expected it is believed that heavy dumpings will be made during the next few days. The following Government colliers are expected to load at Hampton Roads during May: "Proteus," "Nereus," and "Cyclops." These vessels will take approximately 38,000 and this with coal already taken by the Government will assist materially in swelling May dumpings at the various piers.

The following vessels sailed from Hampton Roads with cargoes of coal during the week Apr. 30 to May 7, inclusive:

Norfolk

Vessel	Destination	Tons
Montoso	San Juan	3000
Dinsdalehall	Genoa	4200
Posillipo	Gib for orders for Italy	8100
Mar Terso	Siracusa	4392
Jas. W. Maxwell	Para	1714
Tea	Caglairi	7158
Chinche	Chilian Ports	1900
Guineguada(bark)	Las Palmas	405
Henrik Isben	Valencia	7032
Palembang	Soubaja, Java	8013
Seillin	Messina	4392
Paddington	Spezia	5622
Wegadesk	Colon	6500
Tabor	St. Thomas	5500
Sicania	Italy	5316
Pendarves	Barcelona	3447
Boniface	Para	605
Windsor	Savona	7979
Juan	Kingston	1100
Haugarland	Venice	6550
Poviga	Savona	4475
De.lin	Kingston	2800

Newport News

Vessel	Destination	Tons
Wearbridge	Rio de Janei o	5889
Svend 2nd	Havana	3000
Honduras	Havana	2715
St. Lenords	Rio de Janeiro	6400
Kanawha	Rio de Janeiro	2800
Oakland Grange		6300
Florizel	Port au Spain	

Virginian Ry.—Dumpings of this road at Hampton Roads for the week ended May 8 amounted to 178,738 tons.

Norfolk & Western Ry.—Dumpings of this road for the week ended May 8 were 138,105 tons.

Note—Steamers are indicated by **bold face** type, all others being schooners.

OCEAN CHARTERS

Coal charters have been reported by the "Journal of Commerce" as follows:

Vessel	Nationality	From	To	Tons	Rate
Falk	Norwegian	Philadelphia	Kingston, Ja.	1126	
Tysland	Danish	Philadelphia	Cienfuegos	876	
Chelston	British	Philadelphia	Havana	2389	
Iona Tunnell		Philadelphia	Galveston	1118	
Penaghi					
Lykiardopoulos	Greek	Norfolk	La Plata	2054	$8.40
Rosalia	Italian	Norfolk	Santos	2673	9.60
Den of Crombie	British	Baltimore	West Coast Italy	3128	10.80
Ferndene	British	Baltimore	Palermo	2444	
Modiva	Norwegian	Baltimore	Sagua	778	
Maude Palmer		Norfolk	Para	1485	
Dorothy B. Barrett		Baltimore	Boston	1799	
Claveresk	British	Philadelphia	Havana	2441	
Robert P. Murphy		Philadelphia	Porto Rico	572	
Edwina		Philadelphia	Porto Rico	398	
Robert A. Snyder		Philadelphia or Virginia	Nassau	302	
Urd	Norwegian	Philadelphia	Barcelona	1968	
St. Andrews	Norwegian	Philadelphia	Havana	1899	
Malinche	British	Philadelphia	Antilla	1165	
Clara A. Donnell		Atlantic Range	Canary Islands	990	
St. Helens		Atlantic Range	Tiburon	1212	$6.50
William Chatham		Atlantic Range	Tiburon	915	
Alvarado		Atlantic Range	San Diego	940	6.95
Augustus Welt		Norfolk	Rio Janeiro	1111	
Marguerite		Philadelphia	Mayport	1475	1.00
Linda Fell	British	Baltimore	Alexandria	1924	
Ubbergen	Dutch	Baltimore	Havana	1150	
Sif	Norwegian	Newport News	Martinique	1959	

Note—Steamers are indicated by **bold face type**, all others being schooners.

OCEAN FREIGHTS

Numerous export charters. Prohibition of British coal exports creating an expansion in American shipping. Rates easier to South America but firmer to Mediterranean.

The sinking of the "Lusitania" has had no appreciable effect as yet on the freight market. We continue to charter one or two steamers daily for export coal, and the action of the British Government in placing an embargo on the exportation of coals from Great Britain to countries other than her allies or colonies, will undoubtedly increase the exportation of American coal very materially.

Since our last report about 15 steamers have been chartered for Plate and Brazil coals, a few of which charters were effected in London for shipment of coal from here, and we find that the charters we have made will average about 48c. per ton less than the charters closed on the other side.

South American rates are easier but Mediterranean rates are stronger owing to the firm offers that are being made by Philadelphia parties of $10.80, all freight paid in advance for steamers to take coal from U. S. Range to Genoa.

Ocean freights are now quotable on the following basis:

To	Rate	To	Rate
Havana	$2.25@2.50	Bermuda	$3.50@3.75
Cardenas or Sagua	3.25@3.50	Vera Cruz	3.50
Cienfuegos	3.25@3.50	Tampico	3.50
Port au Spain, Trinidad	3.75@4.00	Rio	9.24
St. Lucia	3.50@3.75	Santos	9.36
St. Thomas	3.25	Montevideo	8.64
Barbados	3.75@4.00	Buenos Aires or La Plata	8.76
Kingston	3.00@3.25	Rosario	8.88
Curacao	3.75@4.00	Mediterranean*	9.60
Santiago	3.25@3.50	Spain**	9.60@10.08
Guantanamo	3.25@3.50	Valparaiso†	6.72
Demerara	5.50@6.00	Marseilles	9.60

Note—Rates noted in **bold face** type are only approximate.
* To a direct port on the West coast of Italy.
† With 800 tons per day discharge.
**Spanish dues for account.
W. W. Battie & Co.'s Coal Trade Freight Report.

LAKE MARKETS

PITTSBURGH

No improvement in demand in general market and Lake shipments still very light. Prices irregular. Production at 50 to 60% of capacity.

The Pittsburgh district coal market is growing no better with the progress of the season. While Lake shipments are slightly increased they are still very small and no hopes are entertained for anything like a normal volume of shipments before July 1 at the earliest. Unless an unusual demand develops late in the season the movement as a whole will show little improvement over the disappointing tonnage of last year.

Retail demand continues light and manufacturing demand has shown no increase, having been practically stationary for several weeks. Reports from the steel trade are of production at an unchanged rate so that there has been no reason to expect an increase in coal shipments either to producers or consumers of steel. The railroad demand is only fair.

Prices for Pittsburgh district coal continue very irregular. It is claimed here that other districts are making the market,

although of course it is admitted that the local competition is keen. There is very little contracting either for Lake shipment or for local consumption. The asking price on contracts to run to Apr. 1 remains at about $1.15 for mine-run, but it is probable this could be shaded. On Lake coal (¾-in.) the regular market continues to be $1.15 to consumers or $1.10 to dealers, but very little is being done at any price. For ordinary prompt shipment the market is quotable about as follows, subject to occasional concessions: Slack, 70@80c.; nut and slack, 90@95c.; nut, 95c.@$1; mine-run, $1@1.05; ¾-in., $1.10@1.15; 1¼-in., $1.20@1.25, per net ton at mine, Pittsburgh district. Mining operations are at the rate of 50 to 60% of capacity.

BUFFALO

Trade continues in the rut particularly toward Canada. Slack the only size in any demand. Consumers apparently cleaning up their supplies. Anthracite slowing down and concessions are reported.

Bituminous—In spite of the acknowledged dullness of the trade there is a general feeling that the actual consumption is steadily increasing. The large consumers, including the leading railroads, are cleaning up their stocks of coal probably with a view to buying as little as possible till after the close of the fiscal year at the end of June.

There is no stir yet in the Canadian trade. It appears that Canada is going to turn her attention more and more to the European war and her manufacturing will be along that line. Some believe that this is sufficient to insure a large factory activity, but if the amount of coal taken is any indication, there is not much business there now. Buffalo coal shippers watch the Canadian market closely, but find little encouragement there as yet and the prospect for an early improvement is not very good. Quotations on bituminous coal remain as before, on the basis of $2.70 for best Pittsburgh lump, $2.55 for three-quarter, $2.45 for mine-run and $2.25 for slack, with the market bare of the latter. Allegheny Valley sizes are about 25c. lower than Pittsburgh.

Anthracite—The trade is dropping off. Some sellers are apparently reconciled to this as being quite seasonable, while others point out that with all the effort to stimulate buying by cutting the price, the tonnage has not been large this spring; as a result the trade has lost doubly to the consumer, who is not only getting coal at a reduction in many instances, but it is economizing in quantity. The westward movement of anthracite is not heavy, either by Lake or rail, though no particular complaint is made. Only one shipper is crowding coal westward, the others believing that if it sells eastward there is no need of urging it in any other direction. Anthracite shipments by Lake for the week were 85,000 tons, destined to eight ports, but the great bulk of it as usual, goes to the heads of the Lakes.

TORONTO, CAN.

The market remains dull and heavy with little indication of any improvement.

The trade continues quiet, both in domestic and manufacturing lines. Dealers do not anticipate much change in conditions for some time, as the industrial situation shows little indication of improvement. Prices for bituminous remain unchanged, quotations for best grades being as follows: Retail, anthracite, egg, stove and nut, $7.50; grate, $7.25; pea, $6. Bituminous, steam, $5.25; screenings, $4.25@4.50; domestic lump, $6; cannel, $7.50. Wholesale f.o.b. cars three-quarter lump, $3.56; screenings, $2.90.

TOLEDO

More boats will go up the Lakes despite light coal movement. Domestic trade fair in spots. Low level of water on the Lakes.

Considerable coal has arrived here and some little Lake coal has been shipped but the water movement is unusually light for this season of the year and little is expected in the way of improvement until some of the coal carried over at the upper docks is moved. There will be some movement by June but the really heavy Lake trade will not begin until July.

It is stated that the water in the Lakes is lower than usual which makes it necessary to load coal and ore boats to 18½-ft. draft instead of 19 ft. as was formerly carried. This means that there will be more boats in commission this year than usual for Lake carrying. There is some slight movement in Kanawha splint, Kanawha gas and Fairmont coal for Lake shipment. Owing to the fact that the Pittsburg No. 8 mines are practically all closed because of labor difficulties, Cambridge coal is selling rather better than usual here and prices are fairly strong.

The domestic trade is naturally at the dull season of the year. Prices are not ruling especially firm, depending largely on the urgency of the seller or buyer.

COLUMBUS

The trade continues quiet. Some activity is developing in Lake business and the tone of the market is slightly improved. Prices are still low.

All branches of the business are still quiet and prices are rather weak at former levels. The stocking period has not yet arrived and as a consequence there is little doing in domestic sizes. However, future prospects appear brighter than formerly.

Domestic business is scattered. Only small orders are being received to piece out stocks for the present. There is no disposition on the part of retailers to increase stocks and they have been devoting their energies to cleaning up. Domestic prices are unchanged from the levels of the previous week. Pocahontas lump is selling around $4 while West Virginia splints are quoted at $3.50 for lump and $3.25 for mine-run. Hocking Lump is rather strong at $3.25. Anthracite is also receiving some attention.

Lake trade is showing more activity. Some bottoms have been loaded with Ohio coal and started for the Northwest. Reports from the Upper Lake ports show that there is a large tonnage still on the docks and the interior movement is limited.

Production in Ohio fields has not increased to any extent during the past week. Some spurts are noted in the Hocking Valley where Lake trade is active. But generally speaking the output in the Hocking Valley and allied fields has been about 25% of normal. In the Pomeroy Bend field the output is not more than 40% of the average.

Prices in the Ohio fields are:

	Hocking Valley	Pomeroy	Kanawha
Rescreened lump	$1.45	$1.50	.....
Inch and a quarter	1.30	1.35	$1.30
Three-quarter inch	1.25	1.30	1.25
Nut	1.15	1.25	1.15
Mine-run	1.05	1.10	1.05
Nut, pea and slack	0.60	0.60	0.55
Coarse slack	0.50	0.50	0.45

CINCINNATI

The market is dull in all departments. Prices generally weak except in smokeless. Buying is very slack.

The failure of the industrial situation to improve, except in isolated cases, is largely responsible for an extremely dull market, and for very limited buying in all departments. The Lake movement, save from some of the new districts in the Kanawha field via the C., H. & D., is by no means satisfactory, and such coal as is being moved is not shipped up the Lakes, but is stored at the docks, in anticipation of better business later on.

The domestic market is at a complete standstill by reason of the general reluctance of the retail trade to buy, and industrial consumers seem to feel the same way about steam coal. Contracting has been considerably hampered by this feeling, buyers preferring to take up spot coal at low prices, and take their chance of a rise later on. Everything is still waiting for a general improvement in business.

CLEVELAND

The trade is showing a marked weakness as compared with two weeks ago. The spot market is again down to the low point of the spring.

The absorbing power of the market does not increase. Receipts run less than 300 cars over Sunday, but they stock the market. Fine coal is being sold at $1.65@1.75 and coarse grades in proportion. The Lake trade is not taking much coal and the local markets are getting as much surplus coal as they did all winter. Jobbing prices are so low that operators are unable to make anything, but they are not low enough to let the jobber make a profit. As has been the case a good part of the last six months the shipment prices to jobbers are equal to spot prices.

While industries are increasing their operations slowly the contract business has been very small. Most of the companies are buying on the open market and the outlook is that the contract business will be done late in the summer. One large shipper has not bought any coal except what goes on long-term contracts.

Lake shipping is very light. Only shippers are operating their full fleets, and a number of these have only part of their fleets in service. The Upper Lake docks are well supplied with coal.

Quotations for shipment to jobbers are as follows:

	Pocahontas	Youghiogheny	Bergholz	Fairmont	W. Va. No. 8
Lump	$3.10	.....	.....	.....	.....
Lump, 2 in	.....	$2.20@2.25	$2.00	$1.80@1.85	$1.75@1.85
Egg	3.10	.....	.....	.....	.....
Mine run	2.65@2.70	2.10	1.85	1.85@1.90	1.75@1.85
Slack	.....	1.65	1.60	1.65@1.70	.....

COKE

CONNELLSVILLE

Coke market dragging with prospects good but prices still low. Some contracting for foundry coke. Production decreased and shipments increased to the largest in months.

A contract for about 10,000 tons monthly of high-grade Connellsville furnace has been closed for the second-half of the year, the contract being practically a continuation of one now in force covering the first-half. Two or three other second-half contracts are under negotiation, but consumers show no haste. While nearly all operators regard the outlook for the more distant future as relatively good, it remains a fact that there is cheap coke on the market and until a moderate quantity has been absorbed prices are not likely to advance, however good the prospects. Spot coke, indeed, is a shade easier.

We quote furnace coke at $1.50@1.60 for spot, $1.60@1.65 for shipment to July 1 and $1.75 for shipment over second half. A few consumers have been in the market for foundry coke over the twelvemonth to begin July 1 and a number of contracts for from one car to half a dozen cars a week have been closed at about $2.40, this being for very high-grade coke. Other coke, of standard grade, is available down to $2.20. There is spot furnace coke as low as $2, but the best grades are held at $2.35 or higher.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended May 1 at 292,891 tons, a decrease of 6602 tons, and shipments at 303,377 tons, an increase of 9711 tons, and making shipments the greatest in any week for many months.

Buffalo—There is more activity in coke at the ovens than for some time and it is expected that this will extend this way soon, though it has not done so to any extent yet. Smelters are in operation, with a slightly increased demand for their product. It is believed that the improvement will continue. Prices are founded on $4.15 for best 72-hr. Connellsville foundry and $3.15 for stock coke.

Chicago—Furnace and foundry coke shows no change in prices or demand, and some byproduct coke has been sold during the past week at low prices. There seems to be no way of stimulating the market. Prices are as follows: Byproduct, $4.45@4.65; Connellsville, $4.60@4.75; Wise County, $4.50@4.65; gas coke, $3.75@4; furnace, $4.50@4.65.

St. Louis—Inquiries on foundry coke are few and far between. On byproduct coke a small tonnage is moving in from the East for domestic purposes. Local gas house coke is going out to various yards for storage, and the capacity of the local plant is crowded. There will be a large movement of this to the domestic consumer, beginning the middle of this month.

MIDDLE WESTERN

GENERAL REVIEW

Dullness still prevails but prices show no backward tendency. Screenings strong. Smokeless and Kentucky coals weakened. Anthracite slow.

Shipments of domestic and steam sizes during the past week have been reduced, although prices are fairly well maintained. The movement is less at this time of the year than in past seasons. The trade is not inclined to handle much consignment coal in the present state of affairs. So little business is in sight that it is not considered worth while to reduce prices to obtain tonnage.

Open confidence in the future is reflected in all phases of the trade, although present conditions are anything but satisfactory. Undoubtedly a number of contracts have been made at prices below the cost of production, due to delay on the part of the operators in getting their selling organizations in working order. Another year there is every reason to believe that Illinois, Indiana, Kentucky and West Virginia producers will have more effective selling organizations.

Most of the orders now being received are for future delivery, requests for immediate shipment being few and far between. It is said that loading of lake vessels is very slow, and it is not anticipated that the tonnage will be large before early next month. The docks still have a large accumulation of coal.

The operators continue to restrict production in keeping with market requirements, which means that the Indiana and Illinois mines still kept open are operating between two and three days per week. Screenings are strong, and the fine coal market is about reaching a point where the operators will soon be crushing mine-run or other sizes to meet requirements. It is difficult under prevailing conditions to fix definite prices for the coarser grades of coal, and it is easy to secure concessions of 5c. to 10c. per ton on these sizes when an order is offered for immediate acceptance. On steam coals, and particularly screenings, prices are fairly strong and on a parity with last week's figures.

CHICAGO

Steam coals fairly active but domestic grades are flat. Operations generally much restricted. Some Hocking on demurrage.

Southern Illinois mines virtually have no demand for domestic sizes, although the steam coal is strong, with prices somewhat higher than last week. Mines are being closed down rather than to sell domestic sizes under cost. There are some Saline County domestic sizes being shipped for steam purposes to prevent an over-accumulation of loaded cars at the mines.

A better state of affairs is reflected in the Springfield district, and screenings are strong at 80c. per ton. The demand for domestic coals from the Indiana mines is practically at a standstill, and steam sizes are moving slowly. Screenings from this district are strong.

Eastern Kentucky coal is doing almost the impossible thing of standing still, and there is little or no movement of these fuels into this territory.

There is nothing to be said about Hocking coals except that a few cars of demurrage coal have been sold during the past week at sacrifice prices.

The smokeless situation is still backward and there is little buying.

The demand for anthracite shows an improvement. Some storage orders have been placed, and May buying promises to cover a much heavier tonnage than April. Prices are well maintained.

	Williamson and Franklin Cos.	Springfield	Sullivan	Clinton	Carterville
Lump	$1.25@1.35	$1.15@1.30	....	....	$1.35@1.50
4-in. lump	....	....	$1.40@1.50	$1.40@1.50	....
Steam lump	....	1.20	1.15@1.25	1.10@1.25	....
2½-in. lump	....	....	1.20@1.30	1.20@1.30	....
1½-in. lump	....	....	1.15@1.25	1.10@1.25	....
Mine-run	1.10	1.00@1.05	0.95@1.10	1.00@1.10	....
Egg	1.25@1.35	1.15@1.30	1.15@1.25	1.10@1.25	....
No. 1 washed	1.25@1.35	....	1.60@1.65	....	1.35@1.50
No. 2 washed	1.20@1.35	....	1.75	....	1.35@1.50
6x3-in. egg	....	....	....	....	1.50
Nut	....	1.00@1.05	1.00@1.10	1.05@1.10	....
No. 1 nut	1.25@1.35	....	....	....	....
No. 2 nut	1.25@1.35	....	....	....	....
Screenings	0.90@1.05	0.85	0.80@0.90	0.80@0.90	0.90

	Saline Co.	E. Kentucky	N. Riv. & Poca.	Somerset	Hocking
Lump	$1.25@1.35	$1.15@1.35	$1.50@1.60	$1.50	1.35@1.50
1½-in. lump	1.25	1.15@1.35	....	....	....
Lump & egg	....	....	1.50@1.60	....	....
Mine-run	1.00@1.05	....	1.25	1.15@1.25	....
Egg	1.15@1.25	0.95@1.05	....	1.40@1.50	1.35@1.50
Nut	....	....	....	....	1.20@1.25
Screenings	0.90@1.00	....	....	....	....

ST. LOUIS

Movement light and prices maintained with difficulty. Rumor of a consolidation of Carterville selling interests.

Only a small tonnage of coal is moving and there is no tendency to stock up on any of the sizes. The maintaining of prices on coal from the Standard field, or the effort to maintain them, has caused several buyers to purchase coal from the Carterville field at a 15c. higher rate. Carterville lump and egg can be bought for as low as $1 at the mine, while Standard lump and egg is held at from $1.10@1.20. The difference of 15c. a ton in favor of the Standard coal, which is inferior to Carterville, has forced the buyers to use the latter.

It is understood that a movement will be consummated in the next few days that will bring the Carterville operators into a selling agency to prevent ruinous competition. The headquarters of this movement will likely be in Chicago, and several sales agencies will be eliminated.

An exceptionally good tonnage of anthracite is moving in the first of May and a fairly good tonnage of smokeless has been ordered and some moving. Storage purchasing will be slow this year in a domestic way, perhaps even more so than last year, which was distressing to the retailer.

INDIANAPOLIS

Mines doing about three to four days a week. Prices steady; slack relatively the best sale. A very small improvement in the factory demand.

The coal industry in Indiana keeps at a steady level as to volume and prices. The demand for domestic lump is small as is to be expected at this season. Later on the movement to the Northwest will begin but at present steam

coal is all that is going in that direction. The railroad demand changes little and there is only a microscopical improvement in the industrial takings. Screenings continue to be the backbone of the trade; they sell quite readily at 85 to 90c. On other grades prices are at the summer level. Mines are making something better than half-time. The retail yards have begun stocking up with Eastern coals, in order to obtain the advantage of the low April prices.

The operators in order to avoid the necessity of closing down entirely are shutting off portions of the mines and operating the remaining rooms full time. Contracting is about up to normal for the season; prices, as a rule, are the same as those prevailing last year. Most of the mine owners seem not to expect much revival in trade until the fall demand begins.

KANSAS CITY

Trade generally dull but shows a slight increase due to a better manufacturing demand.

Business is exceedingly dull according to the dealers. The wholesale trade has been holding up well and increasing with a slight increase in manufacturing lines. The operators say that they have been operating their mines nearly to capacity for the past week. They claim that they will begin the extensive winter preparations, probably as early as the last of June, as they expect an early season this year. The mines in the central part of Missouri have been operating steadily and many cars of domestic lump are standing on the tracks. The number arriving here is increasing every week.

PORTLAND, ORE.

Business quiet. Mine owners in Utah and Wyoming send notice that prices will advance 25c. per ton June 1. Wood prices lowest for many years, which weakens coal market.

Business in coal for domestic purposes is very quiet here for the present, and yet dealers face the probability of an advance of 25c. per ton on Utah and Wyoming coals June 1, as they have received notice to that effect. It is supposed that the step was taken by the mine owners to induce May purchases. Wood is cutting into the coal business more than ordinarily just now because of low quotations offered. The price is $4.50, the lowest in many years. How long this price will rule is an open question. The coal dealers put in their summer or storage prices a few weeks ago and may be forced to advance the retail price 25c.

PRODUCTION AND TRANSPORTATION STATISTICS

ANTHRACITE SHIPMENTS

Anthracite shipments for April and the first four months of 1914-15 were as follows:

	April		4 Months	
	1915	1914	1915	1914
Phila. & Reading	1,181,959	1,185,930	3,597,874	3,884,153
Lehigh Valley	1,303,119	1,160,742	4,038,489	3,579,875
Cent. R.R. N.J.	779,356	748,162	2,439,902	2,766,684
Del. Lack. & West.	977,948	894,513	2,828,664	2,755,042
Del. & Hudson	642,913	615,573	2,428,790	2,090,979
Pennsylvania	647,395	619,159	2,014,992	2,166,567
Erie	737,548	648,426	2,443 688	2,548,960
Ont. & Western	215,963	199,659	688,842	741,790
Total	6,486,201	6 072,161	20,481,241	20,534,050

THE CAR SITUATION

The surplus of idle coal cars on May 1 amounted to 119,545 and the shortage 130. The gross surplus of all kinds of idle equipments for the past three months compares as follows: May 1, 1914, 230,533; Apr. 1, 1915, 327,441; May 1, 1915, 290,819.

SAULT STE. MARIE CANALS

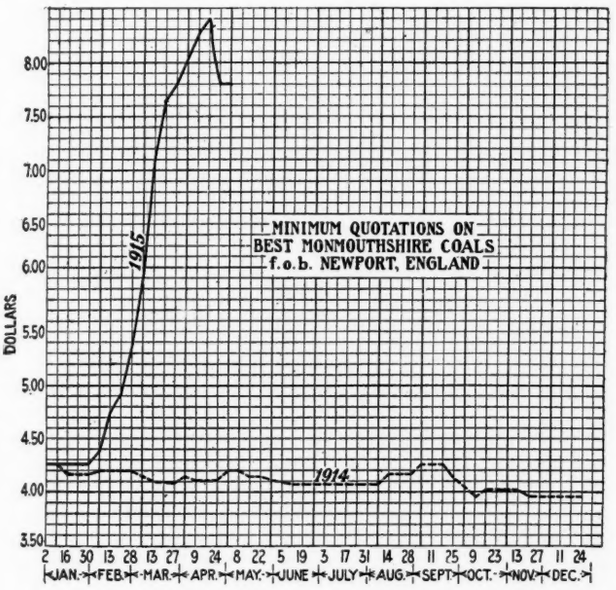
Shipments of anthracite through the Sault Ste. Marie Canals for April of the current year amounted to 130,111 tons. Bituminous shipments totaled 149,455 tons. Bituminous shipments were confined entirely to the United States Canal and 8459 tons of anthracite only passed through the Canadian canal. The United States canal opened Apr. 17 and the Canadian canal Apr. 13.

FOREIGN MARKETS

GREAT BRITAIN

Operators and miners reach an agreement on the Coal Conciliation Board. Reduction of rates on interned steamers. Restriction of exports.

Apr. 30—The coal trade throughout the country during the past week showed little notable change, what change there was being towards a little more coal available at maintained prices. The anthracite trade naturally was quiet, in view of the embargo on exports to neutral countries. The renewal of the Coal Conciliation Board has now been arranged. After discussing the details jointly and separately for many months, the coal-owners' and miners' representatives on Wednesday signed an agreement of renewal. In the House of Commons this week, the President of the Board of Trade stated that he was in communication with the London County Council regarding the Committee's recommendation in favor of the accumulation of a stock of coal in London.



Apr. 30—Conditions for prompt shipment remain easy, while for May shipment colliery owners are quoting with a great deal of firmness. Quotations are approximately as follows:

Best Welsh steam	Nominal	Best Monmouthshires	$7.80@7.92
Best seconds	Nominal	Seconds	7.68@7.80
Seconds	$7.92@8.40	Best Cardiff smalls	5.16@5.28
Best dry coals	8.16@8.64	Cargo smalls	4.44@4.56

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Tonnage is offering freely and chartering continues active. Rates show a heavy decline and are approximately as follows:

Gibraltar	$4.80	Naples	$6.72	Las Palmas	$5.04
Marseilles	5.79	Venice	9.60	St. Vincent	5.16
Algiers	5.79	Alexandria	6.72	Rio de Janeiro	6.60
Genoa	6.72	Port Said	6.72	Monte Video	5.76
				River Plate	6.00

Note—These quotations are based on an exchange rate of 24c. to one shilling.

DIVIDENDS

The following is a partial list of some of the more important dividend declarations by the coal companies:

Island Creek Coal—Regular quarterly dividend on the common of 50c., payable May 1 to holders of record, Apr. 23, and on the preferred of $1.50, payable Apr. 1 to holders of record, Mar. 23.

Lehigh Valley Coal Sales Co.—Regular quarterly dividend of $1.25, payable Apr. 17 to holders of record Apr. 8.

Pittsburgh Coal Co.—Regular quarterly dividend on the preferred of 1¼%, payable Apr. 26, to holders of record Apr. 15.

Delaware, Lackawanna & Western Coal.—Regular quarterly dividend of 2½%, payable Apr. 15 to holders of record Apr. 1.

Burns Bros.—Regular quarterly dividend on the common of 1¼%, payable May 15, to holders of record May 1, and quarterly dividend No. 9 on the preferred of 1¾%, payable May 1 to holders of record Apr. 16.

Consolidation Coal—Regular quarterly dividend of 1½%, payable Apr. 30 to holders of record Apr. 24. The transfer books do not close for this dividend.

Coal Contracts Pending

The purpose of this department is to diffuse accurate information of prospective purchases and prices with a view to affording equal opportunity to all, promoting market stability and inculcating sound business principles in the coal trade.

✚Indicates contracts regarding which official information has been received.

Recast

In the following table we give a list of all old contracts coming up for consideration during the ensuing week. The table gives our contract number, the name of the purchaser, city, tonnage and page on which the detail notice appeared.

No.	Purchaser	City	State	Tonnage	Page
558	Board of Education	Hamilton	Ohio	1400b	709
616	Lighthouse Inspector	San Francisco	Calif.		b 795
643	Board of Education	Lansing	Mich.	5000b	835
644	U. S. Army	Fort Hancock	N. J.	4050a	835
644	U. S. Army	Fort Hancock	N. J.	200b	835
645	Toronto University	Toronto	Canada	8000b	835
645	Toronto University	Toronto	Canada	4000a	835
648	St. Andrews College	Toronto	Canada	400b	835
648	St. Andrews College	Toronto	Canada	100a	835
651	Canada Bread Co.	Toronto	Canada	800a	835
651	Canada Bread Co.	Toronto	Canada	600b	835
656	Murphysboro Water Wks.	Murphysboro	Ill.	12,000b	835
664	U. S. Navy	Washington	D. C.	941,300b	834

a Indicates anthracite coal. b Indicates bituminous. c Indicates coke.

Supplemental Notes

Under this heading additional or supplemental information regarding old contracts appears, together with the page number of the original notice.

✚No. 585—Washington, D. C.—Bids on this contract (p. 749) were opened on May 6, and complete list is given herewith on all items amounting to 100 tons or more. The amount of coal required on the principal items was given in the previous notice. The principal bidders were as follows:

	Bur. E. & P.	Trea. Bldg.	Wind. Bldg.	Prop. Gard.	Frem. Hosp.	Land Off.	Agri. Bldg.	Natl. Zoo	Muse. Bldg.	Sold. Hom.	W. & N. Bldg.	W. & N. Bl.[7]	Prin. Off.	Prin. Off.[10]	P. O. Bldg.	P. O. Anex.	Dept. Comm.	Trea. Bldg.	Navl. Obsv.	Mils. Bldg.
J. Maury Dove	$3.31[1]	$3.65	$3.85	.....	$3.88[2]	$3.43[4]	$3.36[6]	$4.05	$3.29	$3.50[6]	$3.59	$3.44	$3.35[8]	.....	$4.78[11]	.....	$4.74[12]	$3.53	$3.98	$4.65[13]
Commercial Coal Co.	3.40	3.69	3.83	.....	.....	3.48	3.40	.....	3.33	.....	3.54	3.49	3.43[9]	$4.59	4.68	.....	4.69	3.64	.....	4.67
W. H. Marlow	.....	3.63	3.68	.....	3.33	3.35	.....	.....	3.50	.....	3.60	.....	3.30	4.45	.....	$4.35	4.85	.....	.....	4.75
L. E. White	.....	3.75	3.80	.....	.....	.365	.....	.....	3.42	.....	3.65	.....	3.45	4.75	4.80	4.65	4.75	.....	.....	4.80
W. W. Griffith	.....	.....	.....	.....	3.82[3]	3.39	3.45	.....	3.80	.....	3.40	.....	3.47	.....	4.40	4.60	4.35	4.60	3.47	4.00	.....
C. C. Smithson	.....	.....	.....	.....	3.98	.....	.....	.....	.....	.....	.....	.....	3.49	.....	.....	4.76	.....	.....	3.47	.....	4.76
J. E. Chapman	.....	.....	.....	.....	.....	.....	.....	3.70	.....	.....	.....	.....	.....	4.44	4.62	4.64	4.58	.....	4.15	.....	.....
J. P. Agnew & Co.	.....	.....	.....	.....	3.37	.....	.....	.....	.....	.....	.....	.....	3.35	4.62	.....	4.52	4.83	.....	.....	4.83	
L. P. Steuart & Bros.	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4.70	.....	.....	.....	.....	4.85	

	Butl. Bldg.	Butl. Bldg.[14]	Medi. Muse.	Lemo. Bldg.	Fod's. Thea.	Dept. Just.	Civ. Serv.	Geol. Surv.	Dept. Agri.	Weth. Bure.	Dept. Agri.	Dept. Com.	Cost. Surv.	Bur. Fish.	Exec. Man.	Exec. Off.	Green Huose	Wash. Mon.	Navy Annex	Sldr. Hon.	Sldr. Ho.[15]	Botn. Gard.
J. Maury Dove	.....	$6.40	$5.73	$6.29	.....	$6.30	$6.35	.....	.....	.....	$5.93	$5.86	.....	$6.15	$6.02	$6.02	$5.68	$6.08	$5.81	.....	.....	.....
Commercial Coal Co.	$5.73	6.54	5.74	6.42	6.57	6.47	6.03	$3.12	$5.85	$5.95	5.89	5.88	$5.68	6.38	6.08	6.14	5.82	6.23	5.93	.....	.....	$5.64
W. H. Marlow	5.83	6.65	5.85	6.30	6.65	6.35	6.20	6.30	5.90	6.10	5.90	6.05	5.75	.....	5.95	5.95	.....	.....	6.05	.....	.....	5.73
L. E. White	5.78	.....	5.82	.....	.....	.....	.....	.....	5.83	.....	5.97	5.98	5.83	6.65	6.10	6.10	5.95	.....	.....	.....	.....	5.80
W. W. Griffith	6.20	6.55	5.90	6.45	6.90	6.45	6.60	6.00	6.05	5.85	6.00	6.00	6.20	6.45	5.95	5.95	5.95	6.45	6.20	$7.00	$6.20	5.95
C. C. Smithson	5.77	6.45	5.78	6.40	6.69	6.44	6.59	6.09	5.88	5.92	5.89	5.95	5.74	6.34	6.17	6.15	5.83	6.18	6.02	6.82	6.09	5.72
J. E. Chapman	5.69	.....	5.74	.....	6.65	6.40	6.45	5.94	5.70	5.68	5.68	5.68	5.60	6.30	5.98	5.98	.....	.....	5.73	6.74	5.84	.....
J. P. Agnew & Co.	.....	.....	.....	6.47	.....	6.47	.....	6.13	.....	.....	6.13	.....	.....	.....	6.16	6.16	.....	.....	.....	.....	.....	.....
L. P. Steuart & Bros.	6.04	.....	6.04	.....	.....	.....	.....	.....	5.85	.....	.....	.....	.....	6.47	.....	.....	.....	6.40	.....	.....	.....	5.85

[1] Also $3.08, 3.30, 3.16. [2] Also $3.90. [3] Also $3.43. [4] Also $3.38. [5] Also $3.31 and 3.26. [6] Also $3.43. [7] Anthracite, buckwheat No. 1. [8] Also $3.25. [9] Also $3.41 and $3.59. [10] Anthracite pea. [11] Also $4.89. [12] Also $4.85. [13] $4.79. [14] Anthracite nut. [15] Anthracite furnace.

PROPAGATING GARDENS—Chas. F. Miller & Co., $3.94. HOSPITAL FOR THE INSANE—New Central Coal Co., $2.95; Peerless Coal Co., $2.98; Quemahoning Coal Co., $3; Piedmont & George's Creek Coal Co., $3.10; Sullivan Bros. Coal Co., $3.07; Weston Dodson Co., $2.95; Davis Coal & Coke Co., $2.89; W. H. Bradford, $2.88; Consolidation Coal Co., $3.30; Enterprise Coal Co., $2.87; George's Creek Coal Co., $3; Lynah & Read, $3.07. U. S. SOLDIERS' HOME—Enterprise Fuel Co., $3.53; C. W. Hendley & Co., $3.40. NATIONAL ZOOLOGICAL PARK—Chas. F. Miller & Co., $3.99. GOVERNMENT PRINTING OFFICE—National Coal Co., $3.20. ARMY MEDICAL MUSEUM—Henry W. Zeh, $5.78. Address Acting Sec. of the Treasury, Byron R. Newton, Gen. Sup. Com., Washington, D. C.

✚No. 448—Springfield, Mass.—The proposals noted in this contract (p. 834) do not supersede those previously requested for Apr. 15 (p. 627). The new contracts are to supply the requirements of the Ordnance Department. A bond for $3000 will be required only of the successful bidder, and not of all bidders, as previously noted. All bidders will be required to submit an amount equal to 2% of the estimated amount involved in the contract. Address Commanding Officer, Springfield Armory, Springfield, Mass.

✚No. 454—Cleveland, Ohio—Bids on this contract (pp. 627-748), which provides for furnishing coal for the East 53rd St. Station of the Municipal Electric Light Department will be received until noon, May 28. Complete specifications and details may be obtained on application. Address Comr. F. W. Ballard, Heat and Light Dept., 1443 East 3rd St., Cleveland, Ohio.

✚No. 465—St. Louis, Mo.—The bids received on this contract (pp. 627, 707, 794), which provides for furnishing the various school districts in St. Louis with coal during the ensuing year, were as follows: BITUMINOUS—Devoy & Kuhn, $1.94¾; Polar Wave Ice & Fuel Co., $1.91¾ (O'Fallon coal); Bald Eagle Mining Co. (Winkle coal), $1.91¾. ANTHRACITE—Polar Wave Ice & Fuel Co., $7.47 on stove and $7.72 on chestnut; Devoy & Kuhn, $7.73 on stove and $7.98 on chestnut; the Boehmer Coal Co., $7.54 on stove and $7.79 on chestnut. This business usually has from eight to twelve bids offered on it, but the uncertainty prevailing in this district has restricted the number of bidders. Address Supply Commissioner, 3431 School St., St. Louis, Mo.

✚No. 475—Rock Island, Ill.—Sealed proposals will be received until 10 a.m., June 1, for furnishing the Rock Island Arsenal with coal and coke as follows, per gross ton: Anthracite, Lehigh egg, 100 tons; bituminous (blacksmith coal), 100 tons; mine-run bituminous, best quality, for delivery in lots of 100 to 200 tons, 5000 tons; Connellsville coke, selected, 72-hr., 50 tons; Solvay coke, 50 tons. Address Lieut. Col. Geo. W. Burr, Rock Island Arsenal, Rock Island, Ill.

✚No. 542—Harvey, Ill.—This contract (pp. 708, 834) will not be concluded at the present time, the company having

decided to purchase its requirements for the time being in the open market. Address Pur. Agt. L. C. Curl, the Buda Co., Harvey, Ill.

✚No. 631—Milwaukee, Wis.—The Gross Coal Co. was the lowest bidder on this contract (p. 795), which also provides for furnishing 1300 tons of coal to the North Point pumping station, in addition to the 1000 tons of Pocahontas for the high-service pumping station previously noted. The bid of this company was $2.975 per ton. The bid on the Pocahontas contract last year was on the basis of $3.60 per ton. Address Deputy Comr. of Pub. Wks. Percy Braman, Department of Public Works, Milwaukee, Wis.

✚No. 674—New York—Bids on this contract (p. 795), which provides for furnishing and delivering 84,160 gross tons of anthracite and 4700 tons of semibituminous coal for the Board of Education, were as follows:

BOROUGH OF MANHATTAN

Entire Borough

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.	Semi-Bitu.
Tons	18,500	30	300	2500	7500	1200
Burns Bros.	$5.78	$6.63	$6.63	$4.59	$3.60	$3.93
Grove D. Curtis	...	7.00	7.00	4.95	4.20	...
William Farrell & Son	6.10	6.75	6.75	4.90	4.15	4.20
John W. Peale	6.07	6.85	6.85	4.85	3.93	3.98
G. D. Harris & Co.	5.95	6.25	6.25	4.60	3.55	3.75

District No. 1

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.	Semi-Bitu.
Tons	6500	30	100	1500	2500	250
G. D. Harris & Co.	$5.95	$6.25	$6.25	$4.60	$3.55	$3.75
C. D. Norton & Co.	...	...	...	...	3.84	...

District No. 2

Grade	Broken	Stove	Pea	No. 1 Bkwht.	Semi-Bitu.
Tons	5700	90	100	1800	950
G. D. Harris & Co.	$5.95	$6.25	$4.60	$3.55	$3.75
C. D. Norton & Co.	6.07	6.75	4.94	3.84	3.84

District No. 3

Grade	Broken	Stove	Pea	No. 1 Bkwht.
Tons	6300	110	900	3200
Olin J. Stephens, Inc.	$5.90	$6.70	$4.90	$3.90
George D. Harris & Co.	5.95	6.25	4.60	3.55
C. D. Norton & Co.	6.07	6.75	6.94	3.81

For delivering the entire estimate for Manhattan Borough "alongside" in boats, bids were received as follows: Meeker & Co., 2500 tons pea, $3.45; 7500 tons No. 1 buckwheat, $2.79. George D. Harris & Co., 18,500 tons broken, $5.10; 30 tons egg, $5.40; 300 tons stove, $5.40; 2500 tons pea, $3.75; 7500 tons No. 1 buckwheat, $2.70; 1200 tons semibituminous, $2.90.

BOROUGH OF THE BRONX

Entire Borough—Furnishing and Delivering

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.
Tons	5500	45	280	200	4800
S. Trimmer's Sons	$6.43	$7.15	$7.00	$5.25	$4.40
Olin J. Stephens, Inc.	6.15	7.00	7.00	5.10	4.15
Burns Bros.	6.18	6.69	6.69	4.74	3.89

Entire Borough—Delivered "Alongside" in Boats

Meeker & Co.	$2.82

District No. 1

Grade	Broken	Stove	No. 1 Bkwht.
Tons	2800	100	3000
M. L. Bird Co.	$6.13	$6.88	$3.87
S. Trimmer's Sons	6.30	6.85	4.30
C. D. Norton & Co.	6.40	7.00	4.14

District No. 2

Grade	Broken	Stove	Pea	No. 1 Bkwht.
Tons	1400	100	200	1800
C. D. Norton & Co.	$6.50	$7.00	$5.14	$4.24

District No. 3

Grade	Broken	Egg	Stove
Tons	1300	45	80
Richard Morrison	$6.50	$7.00	$7.00

BOROUGH OF BROOKLYN

Entire Borough—Furnishing and Delivering

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.	Semi-Bitu.
Tons	1500	55	500	4000	8500	500
Bacon Coal Co.	$5.74	$6.36	$6.36	$4.66	$3.91	$4.04

Entire Borough—Delivered "Alongside" in Boats

Meeker & Co.	$3.45	$2.79

District No. 1

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.	Semi-Bitu.
Tons	4500	5	130	650	2300	275
S. Tuttle's Son & Co.	$5.83	$6.60	$6.60	$4.77	$4.02	$4.09
C. H. Reynolds & Sons	5.95	7.00	7.00	4.93	3.84	4.00
A. J. & J. J. McCollum	5.77	6.64	6.64	4.59	3.64	3.74
Brooklyn Union Coal Co.	6.15	7.00	7.00	5.00	4.15	4.05

District No. 2

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.	Semi-Bitu.
Tons	6800	40	70	650	1700	225
T. W. Woods Sons & Co.	$6.09	$6.69	$6.69	$4.93	$4.07	$3.94
C. S. Somers & Co.	6.25	7.00	7.00	5.15	4.15	4.00
J. F. Schmadeke	5.84	7.00	7.00	4.80	4.05	4.00

District No. 3

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.
Tons	2400	5	165	2200	1800
S. Tuttle's Son & Co.	$5.83	$6.60	$6.60	$4.77	$4.02
C. H. Reynolds & Sons.	5.95	7.00	7.00	4.93	3.84
A. J. & J. J. McCollum	5.92	6.89	6.89	4.79	3.82

District No. 4

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.
Tons	1300	5	135	500	2700
J. F. Schmadeke	$6.10	$7.50	$7.50	$4.99	$4.20
A. J. & J. J. McCollum	6.32	7.09	7.09	5.19	4.36
John W. Peale	6.29	7.10	7.10	5.10	4.23
Middle Lehigh Coal Co.	6.30	7.00	7.00	5.10	4.25

BOROUGH OF QUEENS

Entire Borough—Furnishing and Delivering

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.	Semi-Bitu.
Tons	8000	50	350	300	4600	3000
S. Tuttle's Son & Co.	$6.17	$6.90	$6.90	$5.23	$4.19	$4.13
Bacon Coal Co.	5.99	6.59	6.59	4.89	4.14	4.17
V. H. Youngman & Co.	..	..	..	..	..	3.91
John W. Peale	..	..	..	..	..	4.05
G. D. Harris & Co.	..	..	..	..	..	3.84

Entire Borough—Delivered "Alongside" in Boats

Meeker & Co.	$2.82

District No. 1

Grade	Broken	Egg	Stove	No. 1 Bkwht.
Tons	3300	10	145	2350
S. Tuttle's Son & Co.	$6.17	$6.90	$6.90	$4.19
A. J. & J. J. McCollum	5.97	6.72	6.72	3.89
Burns Bros.	5.93	6.78	6.78	3.74
Bacon Coal Co.	5.95	6.51	6.51	4.06

District No. 2

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.	Semi-Bitu.
Tons	1800	5	55	50	1100	3000
S. Tuttle's Son & Co.	$6.17	$6.90	$6.90	$5.23	$4.10	$4.13
A. J. & J. J. McCollum	6.39	6.99	6.99	4.89	4.39	..

District No. 3

Grade	Broken	Egg	Stove	Pea	No. 1 Bkwht.
Tons	2900	35	150	250	1150
S. Tuttle's Son & Co.	$6.17	$6.90	$6.90	$5.23	$4.19

BOROUGH OF RICHMOND

Entire Borough—Furnishing and Delivering

Grade	Broken	Egg	Stove	Pea
Tons	2800	65	125	160
Richmond Ice Co.	$6.40	$7.25	$7.40	$5.15

C. W. Mooers, Elmira, N. Y., offered to furnish 7500 tons Bernice free-burning No. 1 buckwheat, Borough of Manhattan, at $2.45 per ton f.o.b. Perth Amboy. He bid the same price for 2300 tons No. 1 buckwheat for Brooklyn, District No. 1, and 2350 tons same coal for District No. 1, Borough of Queens. He also offered this coal delivered on cars at Jersey City at $2.50 per ton.

Address Supt. of School Supplies Patrick Jones, Park Ave. and 59th St., New York City.

New Business

✚No. 676—Hoboken, N. J.—Bids will be received some time in June by the Board of City Commissioners for supplying all of the city requirements, including the City Hall, fire houses, police stations, libraries, schools and all other city buildings. This is a radical departure from previous practice, when the City Council awarded all contracts in small individual lots. The contract will cover about 18 buildings, and will probably be awarded just prior to the closing of the schools. Address Board of City Commissioners, Hoboken, N. J.

✚No. 677—Everett, Mass.—The Board of Education at this place will receive bids until May 28, for furnishing the fuel requirements at the local schools during the ensuing year. The approximate tonnages involved are: Anthracite, 2000 tons; bituminous, 1500 tons; screenings, 1000 tons. Deliveries are to be made in the bins of the various school houses. Address Chn. of Com. on Fuel, Charles Mauser, Bd. of Edu., Everett, Mass.

✚No. 678—New Brunswick, N. J.—The local School Board will be in the market during either May or June for its annual requirements of coal. Last year stove, egg and chestnut were used, but the new contract will be for stove and egg alone. Stove and egg coal were purchased at $6.62 per ton last year, and nut at $6.81. The call for bids is advertised and the contract let to the lowest bidder. Address Secy. of the Board of Education Morris Bauer, New Brunswick, N. J.

✚No. 679—Dayton, Ohio—The local Board of Education will be in the market during the latter part of May or the first of June for about 6000 tons of coal, which was bought at $3.10 to $3.35 per ton last year. Two-thirds of the tonnage is to be delivered during the summer period and the balance as required. The call for bids is advertised. Address Clerk of the Board of Education, Dayton, Ohio.

✚No. 680—Utica, N. Y.—The Board of School Commissioners at this place will be in the market about June 1 for 3000 to 3200 tons of anthracite and bituminous coal. The current

contract was negotiated on the following basis: Egg, $6.10; stove, $6.10; nut, $6.35; buckwheat, $3.60; bituminous, $3.50. The call for bids is advertised and the business let on a competitive basis. Address Secy. D. J. Kelly, Bd. of School Comrs., 13 Elizabeth St., Utica, N. Y.

No. 681—Toronto, Can.—The Upper Canada College at this place consumes annually about 1000 tons of soft screenings, the present contract expiring shortly. Bids will be received until July 1. Address The Bursar, Upper Canada College, Toronto, Can.

✚No. 682—Apponong, R. I.—The School Board at this place will be in the market some time in June for a contract covering their annual requirements of coal involving from 500 to 600 tons of anthracite. White ash and Lehigh grades are usually bought, the price ranging from $6.80 to $7.05. The call for bids is advertised, and the business let to the lowest bidder. Address Clk. C. O. Carpenter, School Board, Apponang, R. I.

✚No. 683—Perth Amboy, N. J.—The local School Board will be in the market some time during June for their annual fuel requirements involving about 1400 tons of Lehigh egg coal. The business is usually let at about $6.50 per ton. The call for bids is advertised. Address the School Board, Perth Amboy, N. J.

✚No. 684—Morganton, N. C.—The Light & Water Plant at this place will be in the market some time during June for approximately 800 tons of coal. The present contract is held by the Stonega Coal & Coke Co., and provides for furnishing 3- to 5-in. "Rhoda" coal at $3.65 per ton in the plant. Address Supt. F. Jerome Wortman, Light & Water Plant, Morganton, N. C.

No. 685—Albany, Ga.—The Albany Power & Manufacturing Co. of this place will contract some time in June for approximately 2000 tons of coal. The present contract is being filled with 4 in. Jellico coal from the Tennessee and Kentucky fields at about $3.20 per ton. The call for bids is usually advertised. Address Purchasing Agent, Albany Power & Manufacturing Co., Albany, Ga.

✚No. 686—Millen, Ga.—The City Light & Water Plant at this place will contract some time in June for their annual requirements of coal amounting to about 500 tons. It is understood that the business is not competitive. Mine-run coal is required. Address H. B. Davis, City Light & Water Plant, Millen, Ga.

✚No. 687—Ketchikan, Alaska—The Lighthouse Department at this place will receive bids until 2 p.m. May 30 for furnishing about 1500 tons of coal, during the fiscal year 1915. Blank proposals and specifications may be had on application. Address Lighthouse Inspector, Ketchikan, Alaska.

No. 688—Vandalia, Ill.—The City Light & Power Plant at this place will be in the market some time during June for 2700 tons of screenings. The present contract was made at 70c. per ton, f.o.b. mine. The call for bids is usually advertised. Address City Clk. F. C. Chandler, Vandalia, Ill.

No. 689—Chicago, Ill.—H. W. Caldwell & Son Co. will be in the market about June 15, for one year's supply; 250 tons per week, of No. 3 Illinois or Indiana washed nut will be required. Address Purchasing Agent, H. W. Caldwell & Son Co., Chicago, Ill.

✚No. 690—Port Huron, Mich.—Sealed proposals will be received by the Board of Education at this place until 2 p.m., May 26, for furnishing approximately 1200 tons of Pocahontas smokeless coal. Bids should cover the cost of delivery in bins at the various school buildings, and will generally be completed before Sept. 1. The ash contents must not exceed 7% and analysis of the coal must accompany all bids; nothing under 14,700 B.t.u. will be considered. A certified check for $300 must accompany each bid. Address Secy. Bd. of Edu. Loran C. Elliott, Port Huron, Mich.

✚No. 691—Watervliet, N. Y.—Sealed proposals, in triplicate, will be received until 1 p.m., June 8, for furnishing the fuel requirements of the Watervliet Arsenal, during year ending June 30, 1916. Information furnished on application. Address Col. W. W. Gibson, Watervliet Arsenal, Watervliet, N. J.

✚No. 692—Ottawa, Can.—The Board of Education at this place will receive bids until May 21 for furnishing the fuel requirements at the local schools during the ensuing year. Address Sec.-Treas. Crawford Ross, Public School Board, 222 Gilmore St., Ottawa, Can.

No. 693—Madison, Wis.—The University of Wisconsin is now in the market for their next year's coal requirements, amounting to approximately 20,000 tons of 2-in. screenings per annum. Bids will be received until May 18. Address Secy. M. E. McCaffrey, Regents Board, University of Wisconsin, Madison, Wis.

No. 694—Toronto, Ont., Can.—The Central Young Men's Christian Association building will be in the market until the middle of May for a supply of 1500 tons of soft coal. The contract is let on a competitive basis. Address, Superintendent of Buildings, Central Y. M. C. A., Toronto, Ont.

No. 695—Chicago, Ill.—The Brand Brewing Co. will be in the market about June 15 for a contract for one year's supply of coal; 8 cars per month of Illinois or Indiana steam lump will be required. Address Purchasing Agent, Brand Brewing Co., Chicago, Ill.

✚No. 696—Salem, Mass.—The County Commissioners at this place received bids until May 10 for furnishing 2000 tons of steam coal and 100 tons of white ash and Franklin stove coal. Address Asst. Clk. James P. Hale, County Comrs., Salem, Mass.

No. 697—Chicago, Ill.—Rosenbaum Bros. will purchase from time to time on the open market 150 cars Illinois screenings. They will be in the market about June 15. Address Purchasing Agent, Rosenbaum Bros., Chicago, Ill.

No. 698—Toronto, Ont., Can.—The Toronto Public Library will receive bids until about the end of the month for 500 tons of semi-bituminous coal for heating supply. Pocahontas coal is usually bought and arrangements must be made for summer delivery. Address Secretary, Public Library, College St., Toronto, Ont.

✚No. 699—National Soldiers' Home, Me.—Bids will be opened May 20 for 3400 tons bituminous coal, Georges Creek, Pocahontas, or equal coal, of good quality, dry and merchantable, in fair proportion of slack and lump, 2240 lb. to the ton. This coal is to be delivered in cargo lots alongside Home Wharf at Randolph, Me. (opposite Gardiner, Me.). Delivery to be during the time that navigation is open in the Kennebec River. The wharf will not accommodate vessels drawing more than 13 ft. under ordinary circumstances. Bids to be submitted on a form provided. Bids will also be opened on the same date for 800 tons of anthracite, egg, coal, and 200 tons of range size. The latter also to be delivered in cargoes alongside the Home Wharf, Randolph, Me., during the season. Address Maj. F. L. Appleton, Treas., National Soldiers' Home, Me.

No. 700—Louisville, Ky.—The Kentucky Paper Box Co., which consumes about 960 tons of coal annually, announces it is in the market for coal and is now testing out various grades to find one suited for the manufacturing of their products. At present, eastern Kentucky nut and slack is being used. Delivery is to be by rail on the company's terminal. Address Purchasing Agent, Kentucky Paper Box Co., Louisville, Ky.

✚No. 701—Portland, Me.—Sealed proposals will be received at the office of the Lighthouse Inspector, Portland, Me., until May 20, 1915, for furnishing fuel for vessels and stations. Blank proposals and particulars may be obtained on application. Address Lighthouse Inspector, Portland, Me.

✚No. 702—Peru, Ind.—The City Power Plant at this place will be in the market some time during June for approximately 6000 tons of coal. The business is done on a competitive basis, and Island Creek coal is usually bought. The approximate cost is 97c. per ton. Address Mgr., Arthur Herren, Electric Light & Water Co., Peru, Ind.

✚No. 703—Lowell, Mass.—Sealed proposals will be received by the Middlesex County Commissioners until 10 a.m., May 17, for coal to be delivered as may be required. The requirements are: 150 gross tons of New River, 20 tons of Lackawanna broken, both of these for delivery at the Lowell Jail; 500 gross tons of New River, 20 tons of Lackawanna broken, 30 tons of the best stove coal, all of these for delivery at the Training School of North Chelmsford. A certified check for $200 must accompany each bid, and specifications and proposal forms can be obtained on application. Address County Commissioners, Middlesex County Court House, Lowell, Mass.

✚No. 704—Cambridge, Mass.—Sealed proposals will be received until 10 a.m., May 18, for a supply of coal to be delivered at the East Cambridge House of Correction. About 3500 gross tons of bituminous, 50 tons of anthracite furnace and 25 short tons of anthracite stove coal will be required. A certified check for $200 must accompany all bids, and specifications and proposal forms may be had on application. Address Middlesex County Commissioners, Court House, East Cambridge, Mass.

✚No. 705—Corning, Iowa—Sealed bids will be received until 8 p.m., June 2, for furnishing and delivering 200 tons of coal to the three local school buildings, as directed by the Board. Deliveries are to be made between Aug. 1 and 15 of the current year. Address Secy. Bd. of Edu. W. C. Chubb, Corning, Iowa.

✚No. 706—New York, N. Y.—Sealed bids will be received until noon, May 20, for furnishing and delivering coal to the Armory Board, Bellevue and allied hospitals, departments of bridges, correction, fire, health, parks, in Manhattan and

Richmond, Bronx, Brooklyn, Queens, police, public charities, street cleaning and water-supply, gas and electricity, during the period ending Mar. 31 of the next year. Blank forms and further information may be obtained on application. For previous bids and awards on this contract see pp. 567 and 710. Address Contract Clerk, Room 1226, Municipal Building, New York.

+No. 707—Sunbury, Penn.—The local Board of Education will receive bids until 6 p.m., May 21, for furnishing coal during the fiscal year beginning Sept. 1, as follows: Egg coal 465 tons; pea 69 tons; buckwheat 80 tons; stove 30 tons. Deliveries are to be on cars at siding and also into the cellars of the different school buildings. Address Committee on Supplies, Sunbury School District, Sunbury, Penn.

+No. 708—North Adams, Mass.—Sealed bids will be received until noon, May 15, for furnishing coal to the several public buildings at this place. Specifications as to quantities, delivery, etc., may be had on application. Address Com. of Pub. Wks. John Martin, North Adams, Mass.

+No. 709—Lewistown, Penn.—The Board of Education at this place will receive bids until June 1 for furnishing and delivering in bins of the various school buildings about 200 tons of bituminous coal in addition to a very small tonnage of anthracite. Address Secy. J. J. Biemesderfer, Bd. of Edu., Lewistown, Penn.

+No. 710—Detroit, Mich.—Sealed proposals were received until noon, May 11, for furnishing the City Poor with coal for the fiscal year beginning July 1. Specifications were on file at the office of the board. Address Secy. Harry S. Prenzlauer, Municipal Bldg., Detroit, Mich.

+No. 711—Detroit, Mich.—Sealed bids will be received until noon, May 21, for furnishing the coal required for the County Poor Institutions at Eloise during the fiscal year beginning July 1. Both anthracite and bituminous will be required, and specifications may be viewed on application. Address Secy. Harry E. Prenzlauer, Wayne County Bd. of Poor Coms., Detroit, Mich.

+No. 712—Boston, Mass.—Sealed proposals were received until 10 a.m., May 10, for furnishing 250 tons of coal for use at the local Immigration Station during the fiscal year beginning July 1. Complete details can be had on application. Address Commissioner of Immigration, Long Wharf, Boston, Mass.

Awards

+No. 453—Fort Keogh, Mont.—This contract (pp. 627, 707), which provides for furnishing the Remount Depot at this place with about 750 tons of coal, has been awarded as follows: **Quintin Johnston, Jr.** (Chicago), Carney lump, 10.577c. per 1,000,000 B.t.u., f.o.b. Chicago; **Roundup Coal Mining Co.** (Roundup) mine-run, 18.73c. per 1,000,000 B.t.u., f.o.b. Fort Keogh. Address Depot Quartermaster Capt. Sam'l Van Leer, Fort Keogh, Remount Depot, Mont.

+No. 475—Rock Island, Ill.—This contract (p. 628), which provides for furnishing the Rock Island Arsenal with coal for the fiscal year beginning July 1, has been awarded to the **Rock Island Fuel Co.** on the following basis: 6-in. bituminous lump, $3.57; anthracite nut, $9.14; stove, $8.71. Prices include cost of delivery to buildings at the station. Address Lt.-Col. Kenneth Morton, Ordnance Dept., Rock Island Arsenal, Ill.

+No. 496—Malden, Mass.—This contract (pp. 665, 748, 707), which provides for furnishing the fuel requirements for the local Board of Education has been awarded as follows: **Locke Coal Co.,** bituminous, $4.44; anthracite furnace, $5.83; egg, $6.33; stove, $6.33; stove (in ¼-ton lots), $7.40; nut (¼-ton lots), $7.60. The **Malden Coal Co.** obtained the contract for nut coal at $6.57. Address Clk. of Com. John L. Gilman, City Hall Bldg. Malden, Mass.

+No. 521—Front Royal, Va.—This contract (pp. 666, 707), which provides for furnishing the Front Royal Remount Depot with about 345 tons of anthracite coal, has been awarded to the **Commercial Coal Co.** of New York at $5.89 for egg and $6.14 for stove. Prices include cost of delivery. Address Depot Quartermaster, Front Royal, Va.

+No. 560—Auburn, N. Y.—The awards on this contract (p. 709), which provides for furnishing the local school board with their annual requirements of anthracite egg coal, were: **Harlie J. Churchill** (Syracuse, N. Y.), 500 to 600 tons at $6 for spring delivery, 300 tons at $6.10 for summer delivery, and $6.25 for winter delivery. **Simmons & Rapalee** (Auburn, N. Y.), stove or egg or mixed stove and egg coke, 685 tons for summer delivery at $5, and 150 tons for winter delivery at the same price. Address Supt. of Schools, Henry D. Hervey, 144 Genesee St., Auburn, N. Y.

+No. 567—Brookline, Mass.—This contract (p. 709, 748), which provides for furnishing the local city government with 2963 tons of anthracite and 2000 tons of bituminous coal has been awarded as follows: **Massachusetts Wharf Coal Co.,** furnace, $5.73; egg, $6.25; stove or nut, $6.50. **H. N. Hartwell & Son, Inc.,** buckwheat, $2.36. **E. Russell Norton,** bituminous, $3.45. Address Sec. of Bd. Edward A. McEttrick, Town Hall, Brookline, Mass.

+No. 580—Union, N. J.—This contract (p. 749), which provides for furnishing the local Board of Education with its fuel requirements for the ensuing year has been awarded to the **Lehigh Coal & Supply Co.** of Hoboken, N. J. at the following prices: Pea coal, $4.24; stove, $5.67; nut, $5.94. Address Secy. Fred. Cortal, Bd. of Edu., Union, N. J.

+No. 587—Cohoes, N. Y.—This contract (p. 749), which provides for furnishing the Board of Education at this place with approximately 400 tons of coal, has been awarded to **M. V. Van Santvoord** at $5.57 for egg coal, $5.57 for stove, and $5.34 for pea. There were four other bidders on this contract. Address Clk. Elmer E. Bell, Bd. of Edu., City Hall, Cohoes, N. Y.

+No. 589—West Hoboken, N. J.—This contract (p. 749), which provides for furnishing fuel requirements of the local Board of Education during the ensuing year has been awarded to the **McCann Coal Co. of Jersey City,** at $5.70 per ton. Other bidders on this contract were: E. A. Kiesewetter, $6.01; James Coyle, Jersey City, $6.08; Isaac Jennings, $6.20; Consumers Coal Co., $5.59 for May delivery, $5.69 for June; $5.79 for July; $5.89 for August, and subsequent months $5.97. Address Secy. Alexis Benoist, Bd. of Edu., Hoboken, N. J.

Contract Notes

New York—The cost of unloading coal from vessels into elevated coal bunkers or storage piles has been reduced by the New York Edison Co., in New York City, from more than 25c. originally to not more than 2c. a ton. This, according to George A. Orrok, M. E., is the result of an extensive study of the question of coal handling on piers and involves mechanical handling equipment properly designed for this purpose.

Europe—Denmark and Sweden purchase almost all their coal from the United Kingdom, and the distance and high freight rates will handicap the American shipper in competing for this trade when conditions return to normal. But Sweden has bought some American coal during the last few months and has recently turned to Germany for coal and coke. France stands ready to purchase in the United States if prices can be arranged. Italy is threatened with a coal famine, and it is reported by cable from Madrid that Spain offers a market for American coal of all grades.

South America—Coal supplies have heretofore come chiefly from the United Kingdom, Australia and Germany; but the United States exporters have already begun to take advantage of present conditions to increase their sales. Markets for American coal in Europe, South America, Mexico, India and Egypt are discussed in Special Consular Reports No. 69, Foreign Markets for Coal, just issued by the Bureau of Foreign and Domestic Commerce, Department of Commerce, copies of which may be obtained, for 5c. each, from the Superintendent of Documents, Government Printing Office, Washington.

Spain—A royal decree of Apr. 7, suspends until further notice the import duty and transportation tax on coal, the exemption to apply to all shipments made to a Spanish port on or after the above date. The combined import duty and transportation tax on coal imported from the United States amounted to $1.06 per metric ton (2204.6 lb.). The Director General of the Spanish Customs Department has requested quotations of current prices for coal shipped f.o.b. and c.i.f. from the United States to Spain.

Greenville, S. C.—Press reports are to the effect that the South Carolina Cotton Manufacturers' Association has signed a contract with the Clinchfield Coal Co. for 350,000 tons of coal, the price being unofficially announced to be 85c. per ton. The cotton manufacturers are said to have effected important savings in their coal bills by this coöperative purchasing which is done by a buying committee consisting of three members. About 100 mills are said to participate in the buying.

Buffalo, N. Y.—The contract for furnishing the Buffalo schools with bituminous coal for the ensuing year has been awarded to **C. A. and M. Kaiser.**